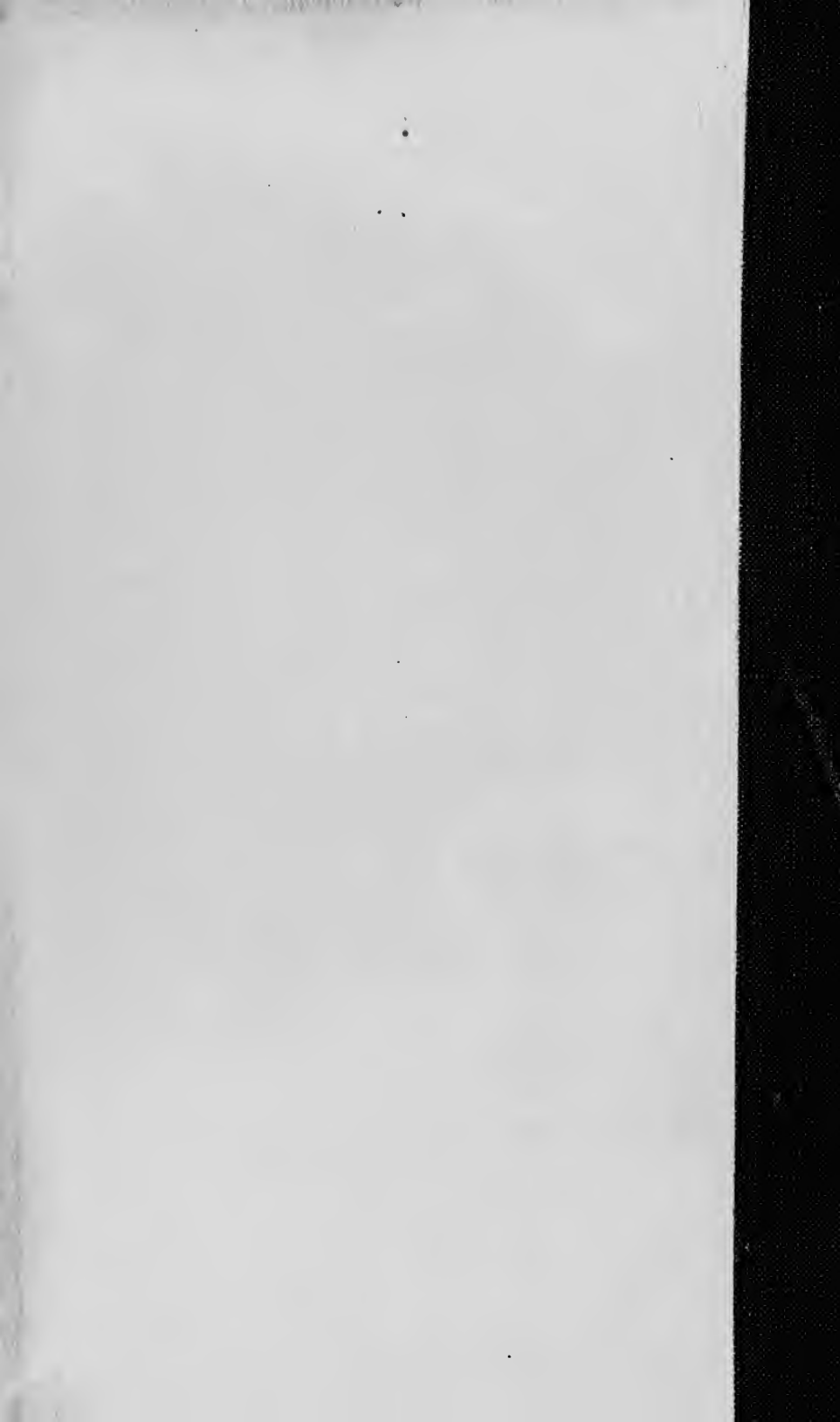
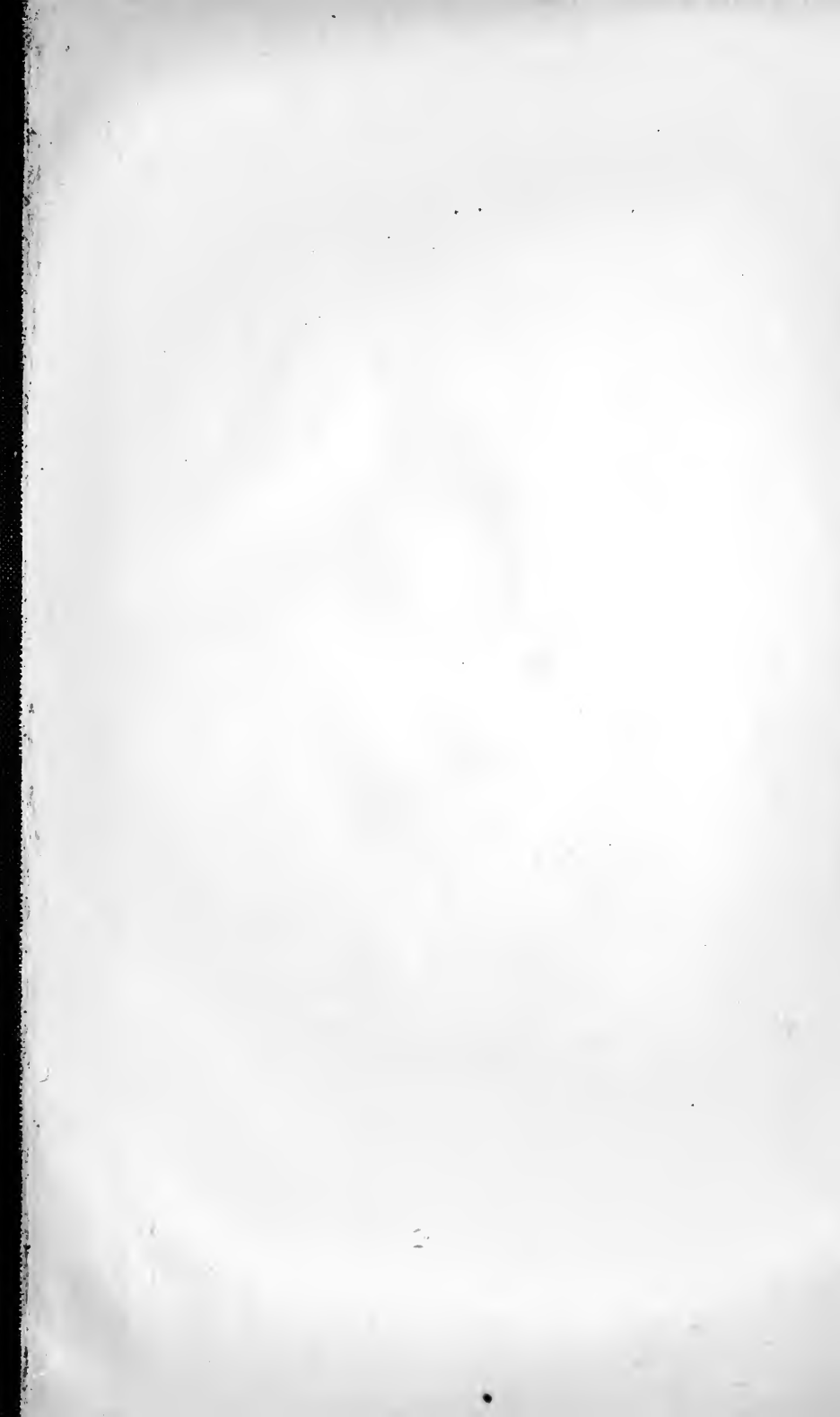





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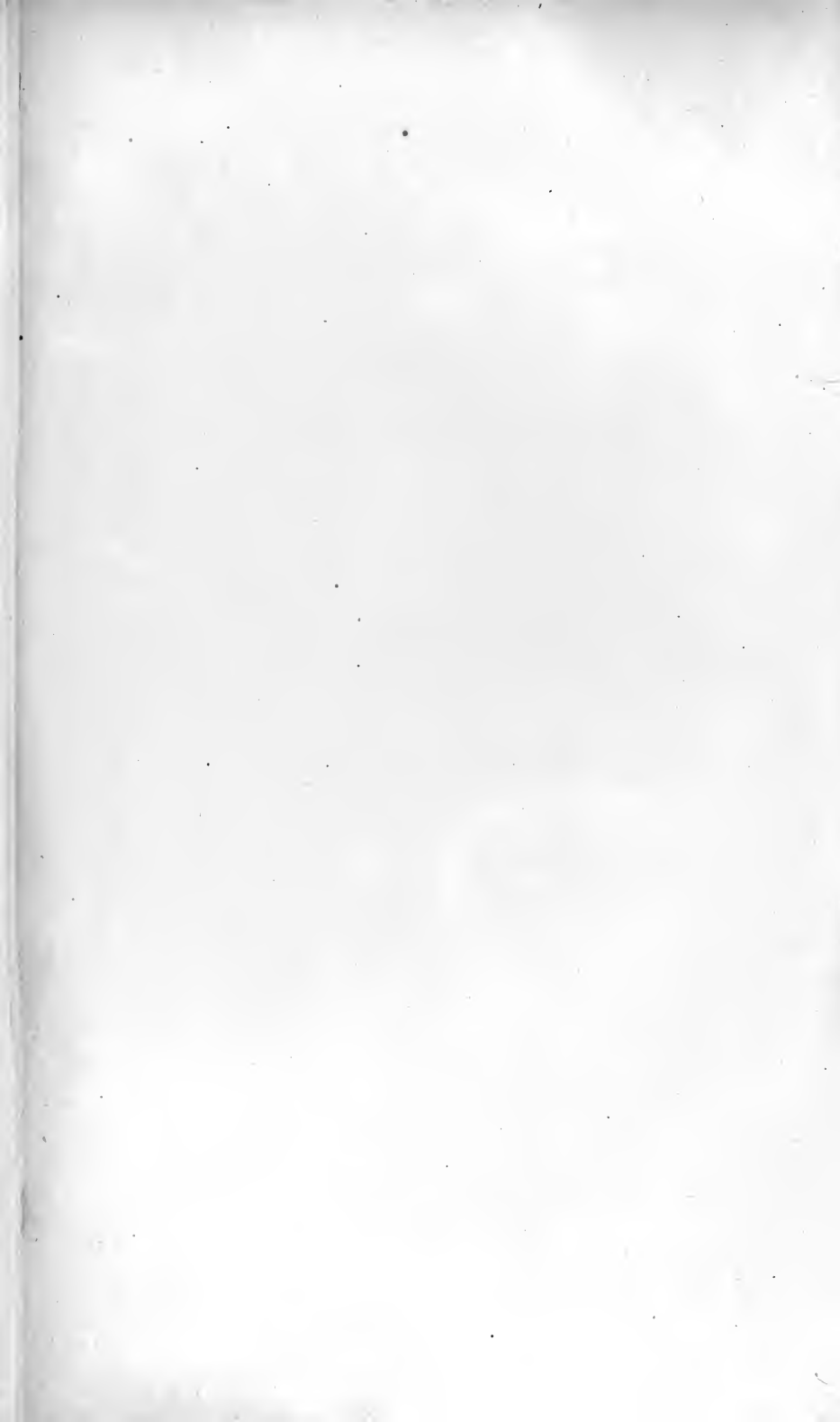


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THE BLOT UPON THE BRAIN.



THE
BLOT UPON THE BRAIN:

STUDIES IN HISTORY AND PSYCHOLOGY.

BY

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" 'Tis the blot upon the brain
That *will* show itself without."

TENNYSON.

NEW YORK :
G. P. PUTNAM'S SONS,
27 & 29 WEST 23RD STREET.

1886.

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PREFACE.

IN the following pages the study of diseased function of the brain has helped the author to give explanations of some important events in history. In a similar way several questions in psychology are approached through knowledge gained by observations in mental derangement.

In perusing the opening essay on Hallucinations, the reader will derive assistance from the plates in the last paper.

It is hoped that the interest of the subjects treated will attract persons of culture beyond those directly interested in medical psychology. The author has tried to avoid technical terms, as far as clear definition seemed to allow.

It is hoped that a rudimentary knowledge of physiology is now sufficiently diffused to make the more scientific papers understood by educated people without any preliminary study.

In those essays, which have already appeared in the *Journal of Mental Science*, and in *Brain*, there have been considerable changes and additions, save in Paper V., which is reprinted almost word for word, and in Paper IX., in which the new matter comes at the end.

The author has much pleasure in acknowledging the kind assistance afforded to him in collecting materials for the work by Professor BALL of Paris, Professor WESTPHAL and Professor MENDEL of Berlin, Professor TAMBURINI of Modena, and Dr. ADRIANI of Perugia.

In our own country, he has received aids of a similar kind from Dr. CLOUSTON of the Royal Asylum at Morningside,

Dr. GRIERSON of the Roxburgh District Asylum, and Professor TURNER of the University of Edinburgh. He also desires to record the advice and watchful scrutiny of the Rev. W. C. FRASER of Prestonpans, and of Dr. CLOUSTON, in revising and correcting the proof sheets.

For the drawings from which the illustrations are taken, he is indebted to the skill of Dr. DRUMMOND of Prestonpans, and Mr. JOHN C. REID, Student of Medicine at Edinburgh.

Mr. MURRAY, the well-known publisher, has kindly allowed a few pages to be reprinted from an article in the *Quarterly Review* treating of St. Francis Xavier.

WILLIAM W. IRELAND.

HOME AND SCHOOL FOR IMBECILES, PRESTON LODGE,
PRESTONPANS, 1st August, 1885.

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THE BLOT UPON THE BRAIN.

ON HALLUCINATIONS, ESPECIALLY OF SIGHT AND HEARING.

BY way of introduction to the explanations of historical events which follow, I should like to state, as shortly as seems compatible with clearness, what is at present known about the delusions of the senses. To readers not well acquainted with the functions of the nervous system, this essay will likely be the most difficult in the whole book; but if diligently read over, it will make the meaning of the succeeding pages much more easily understood.

Every one assumes the existence of an outer world, known to us through appearances. These appearances can be reduced to changes in the organs of our senses, from which we have learned to make different interpretations. These varying sensations are dependent upon the existence and continuity of the nervous system, which is made up of masses of nerve-cells, granules, and nerve-fibres in the brain and spinal cord, some smaller masses called the sympathetic ganglia, and the nerve-trunks. These nerve-trunks, taking their origin from the brain and spinal cord, and communicating with the sympathetic ganglia in their course, give off branches as they pass through the body and limbs, and separate into smaller nerve-twigs, which go everywhere, mixing with all the other tissues of the body. If we could disentangle from the other tissues the whole nervous system, it would bear the shape of the human body, in the same way that a skeleton leaf retains in its vascular tissue the outline of the original green leaf, thicker at the stalk and mid-

rib, and looser at the edges. Some of the changes in the forces of the outer world cause modifications in the nervous system, and these, recognised by the mind, constitute what we call sensation. But the nervous system may be affected by changes within the body; for example, by an altered state of the blood; by external injuries; by cold or heat; or by electricity. Each nerve, when stimulated, gives its own proper and peculiar sensation. If one touches a nerve trunk in the leg, it will give a feeling probably referred to the foot. If one touches or stimulates the optic nerve, a flash of light is seen; or if one excites the auditory nerve, a sound is heard. Thus, changes within the body must be distinguished from changes without the body; and this, in general, is easy. We soon learn the difference between what are called objective or real sounds, produced by vibration in the outer world, and subjective sounds, such as humming or buzzing in the ears, or real changes in the refraction of light, and flashes of light caused by irritation of the optic nerve, or motes floating before the eyes. The nerves are more exposed to excitation at their extremities, as in their course from the surface of the body to the brain or spinal cord, they are well covered up and guarded by the other tissues, hence irritations of their trunks scarcely ever occur, save in abnormal conditions of the economy. When these do occur, we are very apt to confound the sensations arising from irritations from within the body with the ordinary stimuli derived from the contact of the outer phenomenal world. Thus, men fall into various errors. Of these, we have at present to do with illusions and hallucinations. An illusion is an erroneous interpretation of a real sensation; that is, a sensation originating from changes in the outer world acting on some part of the nervous system. Thus, a man mistakes a rock for a tower, or the play of the moonlight through the forest leaves for running water, or a sheet hung up for a ghost. In these instances, the mind has been too rapid in its forecast, either by following the line of habit acquired in cases outwardly similar, or by yielding to the suggestions of hope or fear, or the fallacies of a disordered mind.

A hallucination is a perception of a sensation arising from changes within the organism without any corresponding change

in the outer world. It is a perception that has no object. Hallucinations have been divided into elementary and elaborated. Thus a flash of light, or a sound in the ear, is a simple hallucination; but if a man believes he sees a figure or hears a voice which has no outward existence, it is an elaborated hallucination. This subjective irritation of the optic or auditory nerve appears to him to be the same as the image of some figure or sound already existing in his mind. Misinterpretation may exist both in an illusion and a hallucination. A man may imagine that he hears a human voice from hearing some other sound, or from hearing a subjective sound in the ear; in either case he has made a wrong inference from the sensory impression.

Hallucinations of hearing are more common than those of sight, but hallucinations of taste, smell, and touch are frequently met with amongst the insane. Any one who takes the trouble to examine the cases of hallucination which occur in an asylum, will soon find out that many of them can be reduced to delusions. The patient says, for example, that he has seen Christ; but if you ask him when, he will say, that morning, or the night before, when he himself was floating in the clouds. In fact his memory and imagination have deceived him. It is not easy, even in a large asylum, to see patients who are actually being visited by a hallucination. Most of them, indeed, occur in the watches of the night. The attendants at asylums, who are constantly with the patients, sometimes observe remarkable hallucinations. One man told me that he had seen a lunatic who made the appearance of sewing with an imaginary needle. Once the needle seemed to escape from his fingers, when he caught the attached thread, and seized the spectral needle again as it seemed to him to hang in the air; he then gravely recommenced his sewing. An attendant in the Bothwell Asylum reported of a patient: "His chief hallucination is that of seeing a pair of wings floating in the air. He occasionally admires them for hours, blows them with his mouth with the intention of making them move."

I have heard patients say that they see apparitions when their eyes are shut; in other cases, closing or covering the

eyes makes the hallucinations disappear. Sometimes they are fainter than real impressions; at other times they are so vivid that they cannot be distinguished from ordinary objects, which they cover and shut out of view. This is clearly stated by Nicolai, the bookseller at Berlin, who gave such a well-considered account of the apparitions to which he was subject.*

In the year 1791, being much disturbed and irritated by a series of events which had wounded his moral feelings, and from which he saw no possibility of relief, one morning, while in the company of his wife and a friend, who had come to console him, he suddenly observed, at the distance of ten paces, the figure of a deceased person. He pointed at it, and asked his wife whether she did not see it. After this, to use Nicolai's own description—

"The figures appeared both by day and night, and, when I shut my eyes, sometimes the figures disappeared; sometimes they remained even after I had closed them. If they vanished in the former case, on opening my eyes again, nearly the same figures appeared which I had seen before.

"I saw, in the full use of my senses, and (after I had got the better of the fright which at first seized me, and the disagreeable effects which it caused), even in the greatest composure of mind, for almost two months, constantly and involuntarily, a number of human and other apparitions,—nay, I even heard their voices.

"For the most part I saw human figures of both sexes; they commonly passed to and fro as if they had no connection with each other,—like people at a fair where all is bustle. Sometimes they appeared to have business with one another. Once or twice I saw amongst them persons on horseback, and dogs and birds; these figures all appeared to me in their natural size, as distinctly as if they had existed in real life, with the several tints on the uncovered parts of the body, and with all the different kinds and colours of clothes. But I think, however, that the colours were somewhat paler than they are in nature."

* "Memoir on the Appearance of Spectres; or, Phantoms Occasioned by Disease, with Psychological Remarks," read by Nicolai to the Royal Society of Berlin on the 28th of February, 1799. A translation of this paper is given in *Nicolson's Journal*, vol. vi., p. 161.

Nicolai found that he could not produce any hallucination from the efforts of his memory or imagination. When certain figures which he was accustomed to see had passed before him, he tried to recall them mentally, but he tells us: "I could not succeed in making the internal image external." He never saw anything in the night time unless by fire or candlelight, or in the moonshine.

"I had two spirits," he says, "who constantly attended me, night and day, for about three months together, who called each other by their names; and several spirits would call at my chamber door, and ask whether such spirits lived there, calling them by their names, and they would answer they did. As for the other spirits that attended me, I heard none of their names mentioned, only I asked one spirit, which came for some nights together, and rang a little bell in my ear, what his name was, who answered '*Ariel*.' The two spirits that constantly attended myself appeared both in woman's habits, they being of a brown complexion, about three feet in stature; they had both black, loose net-work gowns, tied with a black sash about the middle, and within the network appeared a gown of a golden colour with somewhat of a light striking through it, &c."

Tracing the disordered state of his health to a plethoric habit, owing to the omission of customary bleedings, Nicolai got leeches applied about eleven o'clock in the forenoon.

"I was," he writes, "alone with the surgeon during the operation; the room swarmed with human forms of every description, which crowded fast on one another. This continued till half-past four o'clock, exactly the time when digestion commences. I then observed that the figures began to move more slowly; soon afterwards the colours became gradually paler; every seven minutes they lost more and more of their intensity without any alteration in the distinct figure of the apparitions. At about half-past six o'clock all the figures were entirely white and moved very little, yet the forms appeared perfectly distinct; by degrees they become visibly less plain, without decreasing in number, as had often formerly been the case. The figures did not move off, neither did they vanish, which also had usually happened on other occasions. In this instance they dissolved immediately into air; of some, even the whole pieces remained for a length of time, which also by degrees were lost to the

eye. At about eight o'clock, there did not remain a vestige of any of them ; and I have never since experienced any appearance of the same kind."

My own inquiries have long ago convinced me that hallucinations, especially of sight and hearing, are far from being uncommon ; but it is rare for them to be described by so highly-cultivated an observer as Sir John Herschel. In a lecture on Sensorial Vision,* this distinguished astronomer assures us that he had frequently seen, or seemed to see, faces or landscapes in the dark, and with his eyes closed.

"The faces were always shadowy, for the most part unpleasing, though not hideous ; expressive of no violent emotions, and succeeding one another at short intervals of time, as if melting into each other. Sometimes ten or a dozen appear in succession, and have always on each separate occasion a general resemblance of expression or some peculiarity of feature common to all, though very various in individual aspect and physiognomy. Landscapes present themselves much more rarely, but more distinctly, and, on the few occasions I remember, have been highly picturesque and pleasing, with a certain but very limited power of varying them by an effort of the will, which is not the case with the other sort of impressions.

"A great many years ago," he goes on, "when recovering from fever, my chief amusement for two or three days consisted in the exercise of a power of calling up representations both of scenes and persons, which appeared with almost the distinctness of reality. One of these scenes I perfectly recollect. A crowd was assembled round a hole in the ice, into which a youth had fallen. His mother was standing in agony on the brink, and there were the floating fragments, and something of a shadowy form under the blue transparent ice. In this case, there was, of course, the excitability of nerve connected with the remains of bodily disorder. On the other occasion to which I allude, I had been witnessing the demolition of a structure familiar to me from childhood, and with which many interesting associations were connected, a demolition not unattended with danger to the workmen employed, about whom I had felt very uncomfortable. It happened to me, on the approach of evening, while, however, there was yet pretty good light, to pass near the

* See "Familiar Lectures on Scientific Subjects," by Sir John Herschel, Bart., K.H., &c., London, 1867, p. 404.

place where the day before it had stood ; the path I had to follow leading beside it. Great was my amazement to see it as if still standing—projected against the dull sky. Being perfectly aware that it was a mere nervous impression, I walked on, keeping my eyes directed to it, and the perspective of the form and disposition of the parts appeared to change with the change in the point of view, as they would have done if real. I ought to add, that nothing of the kind had ever occurred to me before, or has occurred since.”

The following observation from the *British Medical Journal*, 10th March, 1883, seems worthy of reproduction :—

“SIR,—I am attending an elderly lady, who is in an advanced state of Bright’s Disease, but except general debility and œdema, no great sufferer, and in possession of her mental faculties. Cataract is forming on both eyes. Nearly every day she sees for some time a church, numbers of people entering it, carriages driving up, sometimes a market-place full of life opposite her windows, although she is quite aware that there is nothing of the kind in reality. The vision ceases when she shuts her eyes ; therefore, I cannot consider it a hallucination in the proper sense of the term. May the impaired vision (in an anæmic person) be the cause of it, presenting to the mind confused images for a persisting wrong interpretation ?—Yours faithfully,

AUGUSTUS HESS, M.D.

LONDON, 27th February.”

Here there were two elements of disturbance, the cataracts, perhaps, as suggested by the editor, progressing in the form of dotted or linear opacities, and casting shadows on the retina, and the brain weakened by anæmia and disordered by impure blood.

It may be here observed that some hallucinations only appear when the eyes are shut. Baillarger* has given several examples. In one of his cases, G., the moment she shut her eyes, saw animals, meadows, horses, &c. Sometimes, on Baillarger shutting her eyelids, she would name the objects which appeared to her. With many patients,

* “De l’Influence de l’État intermédiaire à la Veille et au Sommeil sur la Production et la Marche des Hallucinations,” par M. J. Baillarger, Paris, 1846, p. 328.

he remarks, the visions are only produced in the dark; the light dispels them at once. Baillarger experienced this himself on the hallucinations which he brought on by the use of haschisch.

Baillarger's memoir is quite a quarry of curious observations, many of which have got into Text-books.

Dr. Victor Kandinsky,* a physician of Moscow, has given us the result of his studies on the hallucinations which he himself experienced.

He had the misfortune to suffer from insanity for two years. During the first months of his illness there was no hallucination, but an irregular mental activity, an intellectual delirium, a headlong race of thoughts, delusions, and dominant ideas. He was affected with melancholia, brooding over his altered circumstances and the probable sequence of his unfortunate illness. It was after the brain was exhausted through this unceasing mental activity, when he had fallen into a weak anæmic condition through voluntary abstinence from food, that the hallucinations began to appear. He remarks that in the normal state the activity of the grey matter of the frontal lobes of the brain regulates and inhibits the random excitations of the centres of sensation; and it is this suspension of activity which makes hallucinations possible, so that hallucinations are no proof of the excitement of the grey matter of the brain, but rather a proof of the abatement of its activity.

Dr. Kandinsky was affected with hallucinations of all the senses, except, perhaps, that of taste; hallucinations of smell were comparatively rare, and it was difficult to distinguish them from real impressions, because the sense of smell was very active. In many cases, he naively remarks, it was not easy to distinguish hallucinations of hearing from real auditory perception, for in asylums the patient hears from every side so many sounds, voices, and speeches of all kinds, that it is sometimes difficult to distinguish the real from the fanciful. Of all the hallucina-

* "Zur Lehre von den Hallucinationen," *Archiv. für Psychiatrie*, xi. Band, 2 Heft, Berlin, 1881. An abstract of this paper, made by me, appeared in the *Journal of Mental Science* for October, 1881.

tions, he tells us, those of sight and feeling were the most frequent, the most lively, and the most diversified. There were numerous abnormal impressions of touch and pressure and constriction of the neck, as well as some remarkable hallucinations in relation to the equilibrium of the body, or round the line of vision, or they seemed to fly in various fixed directions. The ground, he writes, seemed to fly forward under his feet; the wall to fly or be pushed asunder. Sometimes it happened that to the right eye the wall seemed to be moving upwards, and to the left eye the opposite wall seemed to be moving downwards, producing a very painful feeling of sundering of the brain. There was a feeling of rolling down a slope, or of a turning up of the bed, or of being turned round or thrown into the air, and there was a very vivid feeling of flying in space.

Not more than one-tenth of the hallucinations he experienced had any relation to the delusions and involuntary ideas which occupied his mind. The hallucinations were not, in general, incongruous with his personal education and culture, but there were others which, especially appearing at a later stage of his malady, harmonised so little with his experience of himself, that he sought to account for them on the whimsical theory that they were hallucinations communicated by some process like electrical induction from the brain of the patients around him.

As the hallucinations became frequent, the purely intellectual delirium subsided, partly because his mental activity was exhausted, and partly because his whole attention was engrossed by the rapid succession of striking sensory images. His dreams were uncommonly vivid, so that there was no clear distinction between the period of waking and that of sleep. The images in his sleep were so lively that he seemed to be awake during sleep, and the hallucinations in his waking moments were so marvellous and diversified that he seemed to have waking dreams.

"During the period of my illness," he says, "my dreams were not less lively than what I experienced in real life, and when the representations and dreams came back to my remembrance, it was only by a slow and difficult process of questioning myself that I could make

out whether I had experienced those things in reality, or had only dreamt of them. Some of my hallucinations were in comparison with others colourless and indistinct; others were vivid and diversified with the bright colours of the real objects of ordinary vision. For a week I saw on the wall, which was hung with smooth tapestry of one colour, a row of pictures with wonderful golden frames or borders, fresco pictures, landscapes, sea pieces, sometimes portraits with colours as bright as those of Italian artists. Another time, when I made myself ready to sleep, I saw suddenly before me a statue of middle size of white marble in the attitude of a stooping Venus. After some seconds the head of the statue fell off, leaving the stump of the neck with the red muscles. The head, when it fell, broke in the middle, exposing the brain. The contrast between the white marble and the red blood was especially striking.

"There were hallucinations with the eyes open as well as with the eyes closed. In the first of these cases they were seen on the ground, or the carpet, or on the wall, or they appeared in space, covering the objects lying behind them. Sometimes the whole surrounding scene disappeared, to be replaced for a few seconds by an entirely new one. For example, from being in a room I suddenly saw myself transferred to an arm of the sea, and on the opposite shore there was a chain of mountains with all the semblance of reality. Even when my eyes were shut I saw images of living beings, microscopical preparations and ornamental figures upon the dull background of the field of vision. In time I became accustomed to the hallucinations of sight. They ceased to excite or overwhelm me, and at last simply amused me."

Dr. Kandinsky found that the condition most favourable to the appearance of hallucinations was the suspension of activity, both of the mind and body. The only influence which the will has over the hallucinations is that it may place the patient in a favourable position for receiving them. He never succeeded either in intentionally calling before him hallucinations or changing a recollection or a product of the fancy into a hallucination, or even in recalling one which had recently appeared to him. Hence he rejects the view of Lelut that hallucinations are simply thoughts projected outwards.

There is always a clear distinction between hallucinations and images furnished by the memory, or moulded by the fancy.

What is characteristic of hallucinations is not their vivid character, for some are faint, but their felt objectivity, while the images of the memory and imagination are associated with a feeling of activity of the brain, and thus always retain a subjective character. Some artists and poets are gifted with a very powerful and lively imagination, but have no hallucinations, while a man may have a very weak power of imagination and yet be visited by hallucinations. In answer to the question whether his hallucinations were of a peripheral or central origin, Dr. Kandinsky writes :—

“My organs of sense were in a state of hyperæsthesia, but this hyperæsthesia showed itself only in the later period of delirium of the senses. It was expressed through noise in the ears, simple and co-ordinated sounds, through sparks in the eyes, universal lighting up of the field of vision, or by the appearance of points of light moving in circles and sparks. These simple hallucinations had no resemblance to the others of central origin, which were both complicated in detail and harmonious as a whole. Moreover, the peripheral hallucinations lasted after the eyes were shut; those of central origin either disappeared or were replaced by others. The images derived from hallucinations of peripheral origin followed the movements of the eyes; those of central origin generally disappeared on turning the eyes away from them, so that in a new direction nothing was seen or a quite new image appeared. On casting the eyes quickly back, I could sometimes see the same image as before. “Without energetic exertion of the will,” he observes, “my hallucinations would probably have become permanent, and my mental powers totally extinguished; but after I had become accustomed to the hallucinations, I began steadily to read. At first it was difficult, for the hallucinations of hearing disturbed me, and those of sight stood between the book and the eyes, but in time I succeeded in continuing my reading without paying any heed to the hallucinations. With the beginning of a regular mental activity, the hallucinations became paler and less frequent, and disappeared entirely some months later after I had begun to work.”

It appears as if Dr. Kandinsky had wrought out his own cure, and his experience furnishes valuable indications how similar cases should be treated. The only trace of his old hallucinations is the appearance of sparks, stars, and other

figures of light before he composes himself to sleep after fatiguing mental work.

Dr. Kandinsky goes over some of the modern theories on the nature and origin of hallucinations, rejecting them all save the theory of Meynert. This distinguished physician holds that hallucinations are the result of a stimulus applied to the cortex or grey matter of the anterior lobe of the brain. He has demonstrated the anatomical connection of the corpora quadrigemina, the centres of visual perception, with the cortex of the brain. Through this path travel visual impressions with the sensory impressions of the adaptations of the muscles of the eye to the brain where they are associated with the representations of space, but the connection with the factors of the representation of space already begins in the corpora quadrigemina. The grey matter of the anterior part of the brain has for its function the reproduction and association of ideas, and the regulation of the subjective excitement or other parts of the brain, as also the excitation of the centres of the organs of sense at the base of the brain.

If an excitation, representing no outward sensation, comes from one of the inferior centres of the organs of sense to the hemispheres of the brain, the centre of consciousness, there are no means of distinguishing this excitation from a real outward impression, and thus a hallucination is produced. In the normal state, the activity of the superior portions of the brain regulates the merely subjective excitations of the organs of sense. In ordinary language, the intellect distinguishes and interprets our sensations; and by an exertion of the will we pay attention to some of these, and dismiss others. Thus the diminution of mental activity is favourable to the reception of hallucinations. For their production, according to Meynert, two factors are needed—an excitation of the lower ganglia of the brain, the centres of sensation, and a diminished activity of grey matter of the frontal lobes of the brain, the centre of thought.

According to the theory of Dr. Luys,* hallucinations are

* See his views, explained in a pamphlet by Dr. Ant. Ritti, "Théorie Physiologique de l'Hallucination." Paris, 1874.

provoked by a diseased condition of the optic thalami, in which he thought that the sensory impressions transmitted by the nerves and spinal cord became realised as perceptions. Luys even indicated four little masses of grey nerve-cells within each optic thalamus in which the several transformations took place. One of these ganglia was for the impressions of smell; another for those of sight; a third for those of general sensation; and a fourth for hearing. Irritation of these ganglia was believed to produce abnormal feelings; but the interpretation of such sensations is determined by the prevailing tone of the mind. As disease of the optic thalami may exist without disease of the hemispheres, we may have hallucinations without insanity.

In the cases of hallucination given by Dr. Ritti, where an examination was made after death, both the hemispheres and the optic thalami were found to be diseased; but no one will hold that abnormal conditions of the one organ necessarily imply a similar state in the other.

Though the reputation of Dr. Luys secured some consideration for his theory, it has made little way towards acceptance. What it most needed was facts to confirm it, and these have, as far as I know, not been contributed. The announcement of the discovery of centres of motor impulse and of sensation in the cortex, or outer grey matter of the hemispheres of the brain, naturally led to a revision of our theories of hallucinations. Dr. Augusto Tamburini, one of the most distinguished physicians and neurologists of Italy, had by observation and experiment, carefully studied the question of sensory and motor centres. Having arrived at the belief that different parts of the brain surface had, for their more especial function, the reception of impressions transmitted by the sensory nerves, and the conversion of these impressions into mental images, and that other tracts of the brain originated the impulses by which the different groups of muscles were set in motion, he applied these data to the explanation of hallucinations, especially to those of sight and hearing, as the upper brain centres of these senses had been indicated with greater certainty. The centre for the elaboration and storing of visual images is believed by Dr. Tamburini to be not only in the occipital lobe

of the brain, as stated by Munk, but also in the convolution in front of this called the gyrus angularis to which the same function was first assigned by Ferrier. In front of this lies the tempero-sphenoidal convolution, wherein auditory impressions, heard words, are believed to be realised by the mind; and in front of, and above this in the region of the brain, near the margin of the outer ears, lie the convolutions from which motor impulses are supposed to arise, and by sending stimuli to the descending nerve fibres to put in motion the different muscles of the body. To use the words of Hitzig, probably all single mental functions in their entry into matter, or in their evolution from it, are referable to circumscribed portions of the hemispheres of the brain.

The probable locality of the centres for the other feelings such as those of taste, smell, and general sensation, have also been indicated, but with less assurance. Granting all this, as has been done by most physiologists, it is easy to perceive that a derangement or irritation of the sensory areas in the brain might be the causes of delusions of sense. It was not so easy to prove this by any changes of the tissues found after death, because a very slight irritation or increase in the supply of blood to the brain, or the presence of some poison or impurity in the circulating fluid, is known to be sufficient to cause a hallucination. Dr. Tamburini was, however, able to collect a few pathological observations to support his theory, which he states in a masterly way.* He admits that a sensation may be aroused from any portion of the sensory tract; but this sensation will be all the more elementary in proportion as the morbid stimulus is further from that portion of the brain where sensory images are elaborated and stored. The nearer to the brain the nerve tissue to which the stimulus is applied, the more complicated the hallucination will be. A flash of light, or a humming in the ear, may be transformed into a mental image, such as an angel or a message from heaven. In this case, it would be necessary to admit that the brain centre was diseased, since the impression brought to it was misinterpreted

* "Sulla Genesi delle Allucinazioni pel Prof. Augusto Tamburini, Reggio nell Emilia, 1880."

by a morbid discharge of function. Otherwise, irritations transmitted from the nerves could only give simple rudimentary hallucinations, as sparks or sounds, not figures or words which represent complex actions in the brain tissue of a mental character. Dr. Tamburini admits that excitement may begin with the centres of ideation or thought, and may diffuse itself backwards to the sensory centres; but the excitement of an intellectual centre can only give ideal representations of objects, never sensorial images. It is also obvious that a lively reproduction of such images, similar to what are seen and heard in real life, can only come from the simultaneous action of the nervous apparatus of the senses and of the centres of sensation in the brain. Thus, hallucinations cannot be produced without the intervention of the sensory portion of the nervous system. Epilepsy consists of sudden and violent contractions of the muscles, affecting successively different muscular groups. It may occur without mental derangement, and even without loss of consciousness, though this is rare. Hallucination without insanity would be the parallel of epilepsy without insanity. The explanation simply amounts to this, that a certain amount of irritation of a motor centre causes convulsions, and irritation of a centre of sensation causes hallucinations, and that the motor and sensory areas of the brain may be diseased while the neighbouring parts remain sound, or only share in the unhealthy condition by a greater or less amount of irritation. Epileptics are often insane, and almost always irritable, and the coming on of an epileptic fit is often preceded by hallucinations, generally of a chaotic character. On the other hand, persons visited by hallucinations are often troubled by fits or by mental derangement, for the disease accompanying the hallucination, as well as that accompanying the epilepsy, has a tendency to diffuse itself over the whole surface of the brain hemispheres. A hallucination is thus a species of epilepsy of the centres of sensation "*epilessia dei centri sensori*," or, as Hagen called it, "*Krampf der Sinnesnerven*." Dr. Tamburini found in his experiments upon animals that an electrical stimulus applied to the auditory and visual centres, caused hallucinations, as shown by motions of the ears and eyes.

Though sane people sometimes believe that they have heard

short sentences or voices calling their names, which turn out to be unreal, hallucinations of hearing do not seem to be so common with the sane as those of sight; but with mad people hallucinations of hearing are very common, and sometimes very dangerous, as they are prone to obey suggestions which they believe to be commands from a higher power. Blandford, in his book on Insanity, tells us of a lady who was so annoyed by voices coming through the wall that she purchased the adjoining houses to compel them to cease; but, unhappily, she did not so get rid of them. Schröder van der Kolk knew of a case where a man set his house on fire in order to drive out the concealed spirits who continually tormented him with their talking. One patient thought he heard songs coming out of the earth, and used to dig in the ground to get at the singers. When no one is to be seen, the insane often imagine that the speakers are in the next room or hidden somewhere. I have seen a man who imagined that the voices came from under the floor, and used to run about from room to room to get rid of them. Sometimes the insane will hold long conversations with people under the floor, speaking and then listening for a reply. Many patients now say that sounds are conveyed to them through telephones, just as it has long been customary to attribute strange sensations to the action of electricity or mesmerism.

Schröder van der Kolk writes: *—

“A poor woman complained to me that she was continually persecuted by the devil, who let loose at her all sorts of blasphemies, and, indeed, all the worse the more she exerted herself not to attend to them; but often, also, when she was talking and active. She had already been to a clergyman, who should exorcise the devil and who had judiciously directed the woman to me. I asked in which ear the devil always talked to her. She was surprised at the question, which she had never started for herself, but now recognised that it always occurred in the left ear. I explained to her that it was an affection of the ear, which now and then occurs, but she was doubtful; it was impossible to convince her, and all the remedies employed

* “The Pathology and Therapeutics of Mental Diseases,” by J. L. C. Schröder van der Kolk, translated by J. T. Rudall, London, 1870, p. 113.

were ineffectual. This is, moreover, the only case with which I am acquainted where the hallucinations were confined to one ear."

On careful inquiry, it was found that one-sided hallucinations were not unfrequent in asylums. The spectre was only seen with one eye, or the sound was only heard with one ear. These one-sided hallucinations have been carefully studied by Michea, Ball, and Regis, and, in this country, by Dr. Alexander Robertson. I once saw a woman at the Bothwell Asylum, under the care of Dr. Campbell Clark, who had hallucinations of hearing, especially in the right ear. She said that her enemies used this ear to miscall and abuse her, and her friends the left ear to console and support her. She would slap her right ear with her hand, saying that her enemies had got into her head through the right ear and were making a noise. She told me, without any leading questions, that she often had a humming in the right ear, and sometimes a pulse. M. Magnan* has described four cases of this kind. A patient hears in one ear, and always in the same ear, threats and insulting and abusive expressions, while at other times he hears, through the other ear, cheerful and flattering words which excite in him a dream of ambition; and this antagonism in the hallucinations of either ear persists during all the disease. In one, the exasperating words seemed to come through the right ear. In the three other cases the reverse held good.

Dr. Robertson found that one-sided hallucinations are most common in the forms of insanity due to alcohol, when they are more common in the left than the right ear. He found that hallucinations of hearing often persisted for a day or two after the insanity had disappeared. Dr. Regis has collected a good many cases of hallucinations of hearing and sight. He observes that they often appear where the ear or eye is diseased, and even after the normal use of the organ is destroyed. Blind people and deaf people in asylums are often visited by hallucinations of hearing. The irritation, or inflammation, which has destroyed the organ still stimulates the nerve.

Thus chronic inflammation of the internal ear becomes a cause of hallucinations of hearing.

* *Chronique des Annales Médico-Psychologiques*, Novembre, 1883.

A Russian peasant in the asylum of Charkoff,* who was quite blind from amaurosis, though the hearing was acute, was in a state of the utmost terror, believing that he saw Turks everywhere. In order to escape from them he dashed himself against the walls, doors, and windows, crying out at the same time for help and rescue. During these panics he refused all food. The fits were periodical, generally lasting the whole day, and were succeeded by a period of stupor. The paroxysms lasted ten days, at the end of which he fell asleep, and wakened in the morning quite well. He had totally forgotten the fearful experiences which he had gone through, and was quite astonished when told of his frantic behaviour. Dr. Kowalewsky regarded this as a case of psychic epilepsy taking an intermittent form.

There was shown to the Medico-Psychological Society of Parist a young man who had sounds in the left ear when he was thirteen years of age, after receiving a blow which caused inflammation of the internal ear. About two years after this he had typhoid fever with delirium. The deafness became worse, and the sounds in the ear were increased. His mental powers were so far injured that, though not destitute of intelligence, he was incapable of working, became subject to melancholy, and had thoughts of committing suicide. The noises in the ear were most bewildering, and hindered intellectual application. Under the influence of a double cause, increased subjective sounds, and diminished mental power, the sounds passed into hallucinations. He thus described their gradual elaboration. First, there were sounds like a running stream, or water falling from rocks, and reports of firearms; then, a little later, there were singing voices, choruses, first indistinct and distant, and then becoming clearer and nearer, amongst which a soprano voice was clearly heard. After this the patient thought that they called his name again and again, the word becoming more plainly pronounced; then he seemed to hear abusive expressions, which were of a very gross and malicious character.

* See my German Retrospect, *Journal of Mental Science*, April, 1879, p. 274.

† *Annales Médico-Psychologiques*, Mai, 1882.

It is beginning to be recognised that hallucinations in the ear have a powerful tendency to derange the mind; even simple noises sometimes induce such extreme mental distress as to become the apparent causes of insanity. Dr. Fürstner has given twenty-eight cases of insanity which seemed to have originated in diseases of the ear or auditory nerve.*

Dr. Mabillet† had a patient whose constitution had been much reduced by several confinements following one another, and nursing the children. She became listless and melancholy with buzzing noises in the right ear, and her sleep was disturbed by hallucinations. She described her own condition in a letter:—"I felt so much distress that I wished to throw myself into a well. I could not eat, but drank much. At the very beginning I felt a noise in my ear. The least sound that I heard my head was like to open, and for fifteen months this mischief in the ear existed. After the superintendent gave me injections in the ear I felt it no longer." In fact, an injection of luke-warm water into the ear brought away some hardened wax, in the middle of which was a grain of corn. The first night after this relief the auditory hallucinations ceased and the patient could sleep. The general health also improved, the melancholy gradually passed away, and she was discharged in good health after being in the asylum about two months and a-half.

Nägeli,‡ the botanist in Munich, got his eyes severely burned with boiling spirits. The right eye was well again in three days, but the inflammation in the left was severe and painful. He was kept in a darkened room and cold cloths applied for three days upon both eyes and two days longer on the left eye. After twenty-four hours the whole field of vision of the left eye seemed lighted up; soon cloudy spots appeared in different parts, then indistinct figures appeared. After

* *Allgemeine Zeitschrift für Psychiatrie*, Band xl., Heft 1 and 2, and *Neurologisches Centralblatt*, No. 12, 1883.

† See *Annales Médico-Psychologiques*, Novembre, 1883.

‡ Nägeli: "Ueber Selbstbeobachtete Gesichterserscheinungen." A resumé of his paper, originally published in two Transactions of the Bavarian Academy of Science, is given by Professor Jolly in the *Zeitschrift für Psychiatrie*, xl. Band, 4 Heft.

about two hours the objects became quite distinct, and from that time, Nägeli says, it seemed as if I was looking outside with my eyes open in daylight. I saw what one commonly sees, landscapes, houses, rooms, persons. This lasted for thirty-six hours, during which time there was no fever. This was succeeded by a second period of about the same duration, during which the field of vision was less bright; but on a slight fever intervening the bright visions of the first period with the bright field of vision returned. What he saw were not the usual surroundings of his daily life, such as microscopes, or living or dried plants, but mountain landscapes with a lake, sometimes a sea-coast, more rarely a plain with an expanse of water. He also saw human figures. The images did not shift their positions, but turned with the head. Those in the centre of the visual axis were most distinct. The images were at first colourless, with little shading, but gradually they assumed more striking hues though never very bright ones. Sometimes the objects underwent a whimsical metamorphosis; the vision of an ass's head passed into a horn of plenty; a wine barrel into a sphinx; a medicine bottle into a death's-head. It was the left eye, the most injured one, before which the visions appeared. When he opened the right eye the hallucinations disappeared; when he shut it an entirely new hallucination would be seen by the left eye,—for example, he would see a landscape which would disappear on opening the right eye; on his again shutting it, instead of a landscape, he would see a building. He found that he could not by any voluntary method alter the appearance of the visions. He could not even reproduce changes which had already taken place without his desiring it. He imagined that he saw a brown polished table when his eyes were bound up, and this seemed so real that he put a glass of lemonade upon it, which, of course, fell to the ground. Nägeli says that he had never before had any visions, and that his mind was quite clear. He correctly attributes the hallucinations to the irritated condition of the optic nerves, which, through the means of their connections with the brain, aroused images stored up from earlier impressions, and brought them within the range of perception. In fact, we do not

know how far back the irritation may have gone. Nägeli had suffered a painful accident, and had reason to fear that he might lose his sight, which no doubt disturbed his mind. The visions were of a varied and indifferent character, as his fancy was free, and there was no ruling passion nor dominant idea to give a shape to them. Professor Jolly remarks that remaining in the dark causes a hyperæsthesia of vision, and quotes the observations of Dr. Schmidt Rimpler* that the mind is apt to be deranged by the sudden cutting off of light through covering the eyes by bandages when under treatment.

Dr. Foster, in his Text-book of Physiology, tells us that he is aware of a case in which spectra of a pleasing and gorgeous character, such as visions of flowers and landscapes, can be brought on at once by compressing the eyeballs with the orbicularis muscle.

It has been long known that in some cases, by deranging the visual axis by pressing one eye aside, instead of one apparition, two appear. Dr. Despine had a patient who, without being insane, had fits of ecstasy, during which he saw the Virgin and heard her speak. Seizing the moment when he said, "I see the Virgin," M. Despine pressed lightly on the globe of the eye through the eyelid, asking if he saw one or two images of the Virgin. He answered, "I see two, one here and another there." The distance indicated was not great. This experiment, several times repeated, always gave the same result. Dr. Ball† repeated the observation on a young hysterical woman, who fell easily into a state of somnambulism, during which she had visions of a religious character. By pressing the eyeball, they always succeeded in producing a double image.

A still more decisive proof that hallucinations of visions may commence in the retina of the eye has been afforded by Dr. A. Pick.‡ A man of twenty-eight had delusions of persecution.

* *Archiv. für Psychiatrie*, ix. Band, 2 Heft.

† "Leçons sur les Maladies Mentales," par B. Ball, p. 74.

‡ "Jahrbuch für Psychiatrie," ii. 1, quoted in the *Centralblatt für Nervenheilkunde*, 1st April, 1881.

In the first number of *L'Encéphale*, Dr. Regis gives a summary of Pick's

He heard reproaches poured into his ear. A lady followed him with her endearments. He was electrified, magnetised ; he saw visions, such as a burning house. He often heard a voice on the right side. Sometimes it disappeared as he put his finger into the ear, but then it passed to the left ear. He had hallucinations of sight, which affected only the right eye. They appeared generally in the evening when his eyes were shut, but sometimes after awakening. These hallucinations disappeared when he opened his eyes. He often saw portions of figures—heads or feet, generally the upper parts of men, or the tops of trees, or objects which were sharply defined off against a dark ground. There was found to be a broad spot in the right eye, where sight was deficient, without any positive lesion. Dr. Pick places the seat of the lesion in the inner side of the left optic tract, behind the commissure of the optic nerve.

The idea of making a study of the artificial hallucinations in hypnotised persons has been put into execution by some ingenious French psychologists.

M. Féré* has found that during the period of attack of hystero-epilepsy, there were alternations of dilatation and contraction in connection with the distance of the object of hallucination. In two hysterical patients, who could be made aware of what he said to them during the cataleptic attack, he would tell them to look at a bird at the top of a steeple, or rising upwards in the air. The pupil was then observed gradually to dilate to almost double its usual size, and on making the bird descend the pupil again gradually contracted. M. Féré found he could produce the same phenomenon as many times as he pleased by inducing in the mind of the patient the idea of a moving object. From this he concludes that, during these hallucinations, the object is seen exactly as if it

observations, and adds some valuable cases from his own experience. In one of these, a man, blind of the right eye, had hallucinations, seen only with the left. In another, the hallucinations of sight and sound were confined to the left eye and ear. These organs were not so strong as those on the right side ; in fact, the whole left side was weaker.

* *Annales Médico-Psychologiques*, Mai, 1882. M. Féré's paper originally appeared in the *Progrès Médical*, No. 53, 1881.

existed, and that it provoked by its changes of distance efforts of accommodation under the same laws that regulate the perception of a real object.

A hysterical patient was plunged into the hypnotic or cataleptic sleep, and the idea was impressed on her mind that there was a portrait seen in profile on a table of dark colour. The patient distinctly saw the portrait. Without giving her any warning, a prism of double reflecting spar was placed before one of her eyes, when she was astonished to see two portraits instead of one. The false image was always in conformity with the laws of optics.

M. Alfred Binet gives in *Mind** a summary of experiments made upon five hysterical girls at the Salpêtrière. He found, when visual hallucinations were suggested to the mesmerised patient, that a screen placed before her eyes in most cases suppressed the hallucination, though sometimes the images seemed to cover the screen. If the patient has one eye colour-blind, this eye is equally incapable of seeing imaginary colours, and coloured hallucinations cannot be seen if the other eye be shut. In a case of spontaneous hallucination observed in a hysterical mad woman, she saw, at her left side, a man dressed in scarlet. When her right eye was closed, her left eye, which was colour blind, remained open, and the spectre appeared to her grey and enveloped in clouds. It was found, however, that there were some hypnotised patients to whom coloured hallucinations could be subjected through their defective eye. In reference to Féré's experiment, he says :—

“A prism placed before the more normal eye doubles the hallucinatory image and makes one of the images undergo a deviation in conformity to the laws of optics. Even when the subject is colour-blind with one eye, the two images show the same tint (Parinaud's experiment). I have observed in the hysterical mad woman above mentioned, that the deviating hallucinatory image was surrounded by a band of prismatic colours. The patient declared that she saw two Grippeaus (the name she gives to the individual who appears to her), and that one of them was surrounded by a rainbow.”

* No. xxxv., July, 1884. See also *Révue Philosophique*, Mai, 1884.

A spy-glass makes the imaginary object appear nearer or farther off, according as the instrument is adjusted; and a mirror reflects the hallucination and gives a symmetrical image of it.

"All that is necessary for this is to get a reflection of the point of space which is the seat of the hallucination. To bring out the symmetrical character of the reflected image, it is a good plan to give the subject the hallucination of a portrait on a sheet of paper; suppose, for instance, that the profile of the imaginary portrait is turned to the left. When the sheet of paper is placed before the mirror, the subject sees the same portrait but the profile appears to be turned to the right. If for the portrait written lines are substituted, the characters in the mirror appear reversed from right to left or from top to bottom, according to the position in which the paper is placed before the mirror. This last experiment is delicate, and requires a certain practice."

M. Binet admits that his laws do not always hold good—that is to say, his experiments are not always successful.

"It does not seem," he lets us know, "that every hallucination can be doubled by ocular pressure." "More especially, I am inclined to think that unilateral hallucinations and those which move with the movement of the eye do not admit of being doubled, approximated, reflected, &c."

M. Binet invites specialists who may have occasion to observe hallucinations to seize the opportunity of repeating these experiments. For my part, I have tried to do so, and have visited several asylums for the purpose, occasionally remaining for days through the hospitality of the superintendents; but I never succeeded in seizing on the moment favourable for making the experiment of doubling the spectre by getting the patient to look through a prism.

Many readers will think me too simple, and ask on what theory of optics this experiment is based. Epicurus held that spectres were floating films thrown off from the surfaces of objects:—

"Dico igitur, rerum effigies, tenuisque figuras
Mittier ab rebus summo de corpore earum;
Quæ quasi membrana, vel cortex nominanda'st
Quod speciem, ac formam similem gerit ejus imago."

LUCRETIVS, *Lib. iv.*, l. 46.

“A stream of forms from every surface flows,
Which may be called the film or shell of those :
Because they bear the shape, they show the frame
And figure of those bodies whence they came.”

CREECH'S TRANSLATION.

But such films were supposed to be cast off from real objects, while the hallucinations in question were introduced into the mind of the person by words whispered into the ear. How can such an image, even if represented by some change in the retina, be divided into two by a prism held before the eye, or be reflected in a mirror from a point of space? Shall we not rather believe that the mesmerised patient had the quickness to seize upon the idea which he was expected to gratify? For example, he would, in looking through the prism, see real objects double, and would therefore conceive that the hallucination should also be seen double through the same medium. In the same way the mesmerised person would, on seeing the mirror, conceive in her mind that the hallucinated images should also be reflected.

In psychology speculation has long ago done its best, and it is to observation that we must look for more light; but let us not run away with the notion that we understand the nature of hallucinations when we have indicated their anatomical seat. There is a mystery about the relations of sensation and perception to the nerve tissues which cannot be explained. We may know the appearance of the brain, and show its cells, granules, and fibres under the microscope, without getting any nearer the wonders of sensation, perception, and thought, revealed to us in our consciousness. The mind irresistibly puts these tissues into one category, and the thoughts and feelings known to us through consciousness into another. It is willing to recognise that the physical phenomena accompany the mental conceptions, but not that changes in matter are the causes of ideas. The reason why hallucinations appear to have an objective reality is, that they are owing to an irritation which affects the nervous elements of the sensory organs, or those portions of the sensory tracts which are used to convey such sensations to the mind. The ordinary stimulus of the eye is light, but other stimuli, such as touching the optic

nerve, or sending a galvanic current along it, will also cause us to see a flash of light. The same holds good of hearing; the ordinary stimulus to the ear is motions or vibrations in the outer world; but a galvanic current, or irritation of the auditory nerve, will also cause a sound. Irritation is a vague word, implying some change in the nerves. We know that little is required to produce hallucination; a drug such as haschisch, or alcohol in the blood, or a galvanic current along the nerves, is sufficient.

Brierre de Boismont, Ball, Emminghaus, and Baillarger, have given instances where simply holding the head down brought on hallucinations. When I was a boy at school, about nine years old, a hallucination used to occur at my writing lesson. I thought I saw the roof overhead open, and the head and shoulders of a man appear, as one sees a preacher in the pulpit. The face had an angry expression. When I looked up at it the figure instantly disappeared, again to reappear when my head was lowered. I made out the hallucination was connected with holding down the head. It troubled my mind a good deal, but I did not speak about it, fearing ridicule. It passed away after lasting some months, nor did anything similar ever again occur to me.

But though a stimulus may produce a simple hallucination, such as a flash of light or a sound in the ear, there must be some predisposition of the mind to interpret it into a complex one. We thus need two factors, irritation of the sensory nerves and excitement of the brain; we do not say insanity, for an active imagination or a powerful mental strain may be enough.

The irritation may proceed from the circumference to the centre, or from the centre to the circumference. In the one case it is the organs of sense which are affected, either at their commencement in the eye or ear, or the surface of the body, or at some part of their course up to the brain; or what is called the sensory centre in the brain itself. There is a modification of the organs or nerves; or a molecular or chemical change takes place; some call it a vibration. Thus much we may assume. But I do not take it for proved that consciousness is entirely confined to the brain.

A visual image may be conceived in the retina, some of whose layers may thus be viewed as a delicate nervous structure, possessing some of the endowments of brain substance, spread out so as to be subjected to the stimulus of light, and kept out of the way of other stimuli. It is quite true that for this image in the retina to be connected with the mind, the sum of all other impressions and memories, the integrity of the optic tract must be kept up. This optic tract can be traced through a fillet of white fibres and through some ganglia from the eye to the convolutions of the brain at the back of the head. Most of these fibres cross to the opposite hemisphere. The irritation of any portion of this long tract may lead to a visual impression or hallucination, and it is very probable that for a hallucination to be mistaken for a real sensation some of this tract must be affected. But how can a random irritation of the optic tract exactly reproduce the same series of changes which follow the photographic effects of light on the retina? The sight of an old friend, a horse, or a dog, is the result of the refractions of light occasioned by their surfaces. If the same effect appear to follow a coarse irritation of the optic nerve, such as accompanies a burn or simple pressure on the optic nerve, we obviously have the intervention of the mind which puts its own interpretation upon the irritation, reducing it to something expected, or feared, or hoped for.

The theory of hallucinations would be simple, if we could stop here, but we are obliged to admit that occasionally the mechanism goes backwards, from the centres of thought in the brain to the sensory tracts, for sometimes the mental image comes before the sensory one. This, of course, holds good in hypnotism, and in some cases of somnambulism, in which a whisper in the ear, or a mental conception or preoccupation, determines the character of the hallucination.

Sir David Brewster remarked nearly sixty years ago* that, in some cases, an object of mental contemplation which has either been called up by the memory or created by the imagi-

* See the *Edinburgh Journal of Science*, No. 5.

nation, will be seen as distinctly as if it had been formed from the vision of a real object. In examining these mental impressions, he adds: "I have found that they follow the motions of the eyeball exactly like the spectral impressions of luminous objects, and that they resemble them also in their apparent immobility when the eyeball is displaced by an external force."

Dr. Max Huppert* has given a whole series of cases where hallucinations of hearing obviously followed ideas arising in the mind or suggested by reading. He tells of a man thirty-eight years of age suffering from general paralysis, who had led a dissolute life. He complained that he heard voices of women, who reproached him with some of his old misdeeds. He was very fond of reading, but now he found that, when he took up a book, the words which he read were repeated by a chorus of female voices, fifty or sixty in number. At the end of the reading, when he himself had ceased, he heard these voices repeat the last two words or syllables. He found that the voices were no longer heard when he read in a loud tone, but when he stopped reading again they echoed the last word. When he sat down to write a letter, ere he had finished writing out the word the feminine voices had guessed it, and cried it in his ear. Reading with one eye only made no difference. One patient said that his thoughts were spoken in his ear as they were conceived. Some said that the words of a song which they read or thought of were sung in their ears. One patient imagined that he saw before him, when he shut his eyes, the figure of a man or house that he was thinking about; another saw in the air some yards before him the numerals of a sum which he was thinking of. Dr. Huppert treats these as instances of double conceptions, arising from the unequal action of the two sides of the brain. Mental conceptions in one hemisphere were repeated in the other as hallucinations of hearing or of sight. What seems less doubtful is that, in these cases, real impressions entering the mind were thrown outwards as hallucinations.

* "Ueber das Vorkommen von Doppelvorstellungen," *Archiv. für Psychiatrie*, iii. Band, 1 Heft.

Dr. Parant* enforces his argument that hallucinations sometimes take their origin from conceptions in the mind, by giving the details of a case the like of which is not rare amongst the insane :—

“Miss X., thirty-eight years of age, in the asylum of Toulouse, is subject to the mania of persecution. She holds long conversations with imaginary persons, who generally get the title of major. When she has complaints or requests to make she comes to the medical superintendent to make them known. Generally the answers she receives do not satisfy her. Then she goes to some place either near a streamlet, or a wall, or by a window with closed blinds, more rarely behind a door. She strikes several blows to attract the attention of her invisible friends; after waiting a few moments ‘she is informed that they are there, and the conversation begins.’ ‘Major,’ says she, ‘I have asked such and such a thing, and I have been answered such and such a thing. What do you think of it?’ A pause, during which she listens; she speaks again, becomes silent, recommences, and after this performance has lasted several minutes, she comes and tells us that the information she has received does not agree with my words and that we ought to let her free to act otherwise than we permit. At other times she consults her majors because she is told to take food which does not suit her, to work, or obtain something which is disagreeable to her.”

The patient very positively asserted that she hears with her ears and not mentally, nor by the aid of any extraordinary sense.

Dr. Parant observes :—

“The patient unconsciously formulates to herself what she desires or wishes. In this frame of mind she questions her majors, who give her answers in accordance with the preconceived ideas. The answers, previously prepared, shape themselves as soon as the question has been made, and, as a consequence of the morbid conditions, become a true hallucination. In all that has been produced, there is certainly a primordial intellectual operation, a manifest influence of the imagination or the placing in activity of the centres of perception.”

* “On the Pathogeny of Hallucinations in reference to a case of Psychosensory Hallucinations,” translated in the *Alienist and Neurologist*, January, 1883.

Cases like these are too numerous to be got rid of; and we must admit that, though an excited condition of the sensory tract and nerves may be necessary to hallucinations, they may still take their origin from ideas in the mind. In a disease like general paralysis, which commences with inflammatory action of the higher centres, the grey matter of the brain, mental derangement precedes the hallucinations, which appear after the morbid process has diffused itself to those portions of the brain and nerves whose functions are sensory. In other diseases the reverse takes place; the irritation commences with the nerves or lower ganglia, and spreads upwards to the surface of the brain.

In those cases where the conception in the mind precedes the hallucination, we may suppose that the wave of irritation commences in the brain, and descends downwards to the sensory tracts, and even to the extremities of the sensory nerves. Having been first realised as a mental image, on passing down to the sensory region it appears as a sensory impression, in the optic tract as a spectre, in the auditory tract as a sound, and so on.

The exact conditions under which this takes place are not known to us. Why and how is the ordinary procession of impressions from without reversed so that sensory impressions flow backwards from the grey matter of the brain to the nerves, so that thoughts become feelings, instead of feelings begetting ideas? Here it is customary to invoke what we experience in dreams, at once so familiar and so mysterious. There is one broad distinction between ordinary dreaming and hallucinations—that in dreaming we have lost all sense of the antecedent parallel actions of perception and consciousness which accompany us when awake, and which inform us what we have been doing, what we are doing, and where we are. In somnambulism, these parallel acts of perception and consciousness are also cut off, and the mind, for the time being, obeys a single idea. It is the absence of these corrective sensations and perceptions which allows us during sleep to be so easily deluded by our wandering ideas; but the subject of a hallucination is awake, and the delusive appearances are lively enough to cover real sensations, and the vividness of

the delusion is strong enough to overcome the sense of incongruity derived from a comparison between the apparition and the circumstances under which it appears. The ordinary images in my dreams at least have not the reality of sensory impressions, though on rare occasions they seem to be almost, if not quite, as vivid. It may perhaps be said that the condition of sleep is very favourable to the coming on both of illusions and of hallucinations, and that many nascent illusions and hallucinations are cut off by the corrective interference of the judgment. In any case, hallucinations seem to me to partake of the abnormal, and to be indicative of the passage of healthy into diseased action.

PAPER II.

THE HALLUCINATIONS OF MOHAMMED, LUTHER, AND SWEDENBORG.

TO one who does not admit the divine mission of Mohammed it is very difficult to explain the pretensions of that remarkable man, and at the same time to uphold his sincerity. There have undoubtedly been instances where mere politicians have resorted to religious impostures as temporary expedients to advance their ends; for example, the woman whom Pisis-tratus got dressed up in the traditional costume of Pallas, and who conducted him back to Athens from exile, or the milk-white hind which followed Sertorius in Spain, and by means of which he was reputed to hold converse with the Gods. But a contrivance of this kind is a very different thing from the foundation of a religion which now numbers about a hundred and forty millions of votaries, and which possesses to this day a very singular power over the minds of its followers. By the persistent claim of being a messenger from God, after a struggle of twenty-one years Mohammed made himself master of the greater part of Arabia, and roused a mighty religious movement which continued after his death. In a few years more a number of wandering tribes, who had previously no more cohesion than the sands of their deserts, had run a mighty career of conquest, which bore them to the banks of the Loire and of the Oxus. It is generally admitted that men cannot excite in others feelings which are wanting in their own breasts. A man without honesty and destitute of religious faith could no more found a religious system like that of Islam than a man without an ear for music could compose an opera. The old notion that Mohammed was a mere impostor appears so difficult

of belief that no one of any recognised skill in historical inquiry now upholds it. But it has always been a great difficulty to explain how Mohammed could in good faith say that he had seen the angel Gabriel, and heard voices from heaven calling him the Messenger of God, and revealing chapter after chapter of the Koran. It had long seemed to me that the question was beyond human solution, and that it might have been a very difficult one, even had the inquirer lived in Mecca or Medina during the time of Mohammed's mission.

It has been several times suggested that Mohammed was subject to some nervous disease accompanied by hallucinations, and if this could be proved it might help to solve a very interesting historical problem. A theory of this kind has been advanced, and worked out in some detail by Sprenger in his life of Mohammed;* and this learned writer, by printing many of the traditions on which his narrative was founded, allows us, to a certain extent, to exercise our own judgment in the matter. In preparing this paper Sprenger is our principal authority; and when we take a statement from another writer the reference will be given. It is necessary to remember that though the text of the Koran is not disputed by Arabic scholars, the traditions which have come down to us are often very doubtful and full of corruptions and legends. Even Mussulmans are not expected to receive them without criticism; and it is likely that the mythical theory could be applied to many of them.

When Mohammed received his first revelation he was a man of forty-two years of age. He had lost his father in infancy and his mother in childhood, had followed the calling of a travelling merchant, and had been raised to a good position in Mecca by his marriage with a wealthy widow whom he had always treated with the greatest affection, although she was fifteen years older than himself; nor did he ever take another wife as long as she lived.

There are several traditions about Mohammed's first revela-

* "Das Leben und die Lehre des Mohammed nach bisher grössentheils unbenutzten Quellen bearbeitet von A. Sprenger" Berlin, 1861.

tion ; the following, given by Sprenger, is one of the fullest in detail :—

“The revelations of the Prophet began with visions in his sleep as bright as the dawn of the morning. Then a love of solitude came upon him. He used to live alone in a cave of the mountain Hira, where he spent several days and nights together in prayers and devotional exercises, and when he returned to his family it was but to get provisions. He came home then to Kadija, and fetched food for a certain number of days. This lasted until suddenly the truth came to him when he was in the cave of Hira. The angel came to him, and said, ‘Read.’ He tells, ‘I answered, “I will never read.” He seized on me, and pressed me till my strength went away. Then he loosed me, and said, “Read.” I answered, “I will never read.”’”

This was repeated twice with the same answer. After pressing him the third time, the angel said—

“Read, in the name of thy Lord who has created you. He has created men from blood. Read ; the Lord is the greatest who has taught men. He has taught man by writing what he did not know.”

The prophet returned home trembling, and said to Kadija, “Wrap me up.” She covered him up until his agitation was past ; then he said, “Oh, Kadija ; what has happened to me ?” and he told her the story, adding, “I fear for myself.” Kadija answered, “Surely not. Be of good courage. Allah will never make you miserable ; for by Allah you are faithful to your relations. You speak the truth ; you assist the needy ; you are active in your calling ; you are hospitable to strangers, and help people who have fallen into undeserved misfortune.” Then Kadija went to her relation Waraka. “This was a man who had become a Christian in the time of heathendom, could write in Arabic, and had copied as much of the Gospel as it pleased God.” He was very old, and had become blind. Kadija spoke, “Oh, uncle, hear what thy relation has to tell thee.” Waraka said, “Tell what you have seen ;” and Waraka said, “This is the spirit which God hath sent upon Moses. Oh, that I were young ! Oh, that I should be in life when thy people persecute you !” “What !” broke in the prophet, “will they persecute me ?” “Yes,” said

Waraka; "never has a man brought what you bring without having enemies."

According to another tradition, on this first occasion, wherever the prophet turned his gaze, he always saw the same figure; but another account simply says that he heard a voice crying, "Oh Mohammed!" and looking round, and seeing no one, he hastened to his wife and told her of it, saying he feared that he was deranged or enchanted.

Another tradition tells that when

"Mohammed was walking in the defiles and valleys about Mecca, every stone and tree greeted him with the words, 'Hail to thee, O messenger of God.' He looked round to the right and to the left, and discovered nothing but trees and stones. The prophet heard these cries as long as it pleased God that he should be in this condition; then the angel Gabriel appeared, and announced to him the message of God in the mountain Hira, in the month of the Ramadan."

In the Koran his interviews with Gabriel are rather alluded to than described, so we are obliged to depend upon traditions which are not always authentic. According to some of these accounts, after the first interview with the angel, there was a very long silence, and Mohammed was so much troubled in mind that he went sometimes to Mount Thabyr, and sometimes to Mount Hira, with the thought of throwing himself over a precipice. On Mount Hira he heard a voice from Heaven.

"He stood still, for he felt faint on account of the voice, and he turned his face upwards, and behold Gabriel sat with crossed legs upon a throne between heaven and earth, and cried out, 'O Mohammed, thou art in truth the messenger of God, and I am Gabriel.' The prophet then turned back. God had gladdened his heart and filled it with courage. Then followed revelation upon revelation."

According to another tradition, when questioned upon the manner of his inspiration, Mohammed replied*—

* "The Life of Mohammed," by Wm. Muir, Esq., vol. ii., p. 378. London, 1858.

"Inspiration descendeth upon me in one of two ways. Sometimes Gabriel cometh and communicateth the revelation unto me, as one man unto another, and this is easy; at other times it affecteth me like the ringing of a bell, penetrating my very heart, and rending me as it were in pieces; and this it is which grievously afflicteth me."

In the later period of life Mohammed referred his grey hairs to the withering effect produced upon him by the terrific Suras, or passages of the Koran. Ayescha, his favourite wife, said, "I observed the prophet when he got a revelation on a very cold day, and when it was over the drops of sweat stood upon his forehead." Othman was speaking to him one day, when he remarked that his eyes were suddenly turned towards Heaven and then to the right. His head moved as if he were speaking; after some time he looked again towards Heaven, and then to the left, and then to Othman. His face was covered with sweat. Othman asked him what ailed him, when he repeated a verse of the Koran which had just been revealed to him.

There is another tradition that a Bedouin had a strong desire to see the prophet when a revelation came on. Mohammed was lying under a cloth which had been stretched out to shade him from the sun, with Omar and some other followers. Omar allowed the man to put his head under the awning, and he saw that the prophet was red in the face, and seemed unconscious. After awhile he came to himself and gave the Bedouin the advice of which he came in quest. There are other traditions which might favour the idea that he was subject to epileptic fits; for example, he made a sound like that of a young camel. On another occasion he fell upon Zayd's lap with such a force that he feared his leg was broken. Sprenger thinks this attack was so *à propos* that it might have been feigned. Another tradition says that when the prophet had a revelation he fell into a coma as if he were drunk.

It is said that his face turned white, and that he moved his lips as if he were speaking.

Sir William Muir remarks that it is a question of great interest whether the ecstatic periods of Mohammed were simply

reveries of profound meditation, or swoons connected with a morbid sensibility of the mental or physical constitution.

There is a tradition that Akra b. Habis visited the prophet just at the time he was getting cupped on the back of the head, and said to him, "Oh, son of Abu Habscha! why do you allow yourself to be cupped in the middle of the head?" Mahomet answered, "It is a remedy against headache, toothache, drowsiness, leprosy," and Layth adds, "I believe he said also against delusions."

Sprenger tells us that Mohammed used cups for a great variety of complaints. They were made of horn, and probably resembled those described by Celsus, and were brought into use even on the occasion of eating the poisoned mutton which the Jewish woman at Chaibar gave him.

If we are to believe that Mohammed fell into some species of trance, accompanied by hallucinations, this appears different from ordinary epilepsy.

Gibbon tells us, in a note to the "Decline and Fall," that the epilepsy or falling sickness of Mohammed, is asserted by Theophanes, Honoras, and the rest of the Greeks. Against this calumny, he remarks, that "the silence, the ignorance of the Mahomedan commentators is more conclusive than the most peremptory denial." Evidently the great historian, who did not know Arabic, was ignorant of the traditions reproduced by Sprenger. A learned Semitic scholar writes :—*

"Mohammed was epileptic; and vast ingenuity and medical knowledge have been lavished upon this point, as explanatory of Mohammed's mission and success. We, for our own part, do not think that epilepsy ever made a man appear a prophet to himself or even to the people of the East; or, for the matter of that, inspired him with the like heart-moving words and glorious pictures. Quite the contrary. It was taken as a sign of demons within—demons, 'Devs,' devils, to whom all manner of diseases were ascribed throughout the antique world: in Phœnicia, in Greece, in Rome, in Persia, and among the lower classes of Judæa after the Babylonian exile."

* Literary Remains of the late Emanuel Deutsch. London, 1874 Islam, p. 82.

It is clear that Deutsch did not see all the significance which gathers round the admission that Mohammed was an epileptic. One can scarcely wonder at the prophet being represented in a trance, as this was the accredited form in which a Divine revelation was communicated ; as Deutsch himself admits *—

“There is a peculiar something supposed to inhere in epilepsy. The Greeks called it a sacred disease. Bacchantic and chorybantic furor were God-inspired stages. The Pythia uttered her oracles under the most distressing signs. Symptoms of convulsion were even needed as a sign of the divine.”

Thus Virgil, describing the inspiration of the Cumæan Sybil, sings :—

“At Phœbi nondum patiens immanis in antro
Bacchatur vates, magnum si pectore possit
Excussisse deum ; tanto magis ille fatigat
Os rabidum, fera corda domans, fingitque premendo.”
Aeneidos, vi. l. 77.

It is true there is generally an easy distinction between an ordinary epileptic and an inspired prophet. In most cases an epileptic entirely loses consciousness, and when it returns he is in a confused and sleepy state, quite different from that of Mohammed, who had always his rhymed verse of the Koran ready after having had a revelation. But epileptic or epileptiform convulsions are symptoms of irritation arising from or reflected from the brain, which are allied to the whole family of neurosis. The other symptoms and actual diseased condition are often various. Epilepsy, especially when the fits are frequent, is a malady which is often most destructive to mental force and soundness of thought. On the other hand, cases are not unfrequent, especially when the disease has appeared after puberty, where there is no observable injury to the mental powers ; in others the mind is little affected, or the patient may be simply capricious or irritable. In some rare cases, instead of mental enfeeblement, the reverse is noticed. With some epileptics the intellectual faculties are excited, they are

* *Op. cit.* p. 83.

men of talent, sometimes men of genius.* The approach of a fit is sometimes announced by a strange feeling of uneasiness in some part of the body, mounting to the head. This is called an aura, because it often feels like a breath of cold air or vapour. To make use of Dr. Ball's words :—

"The aura is often accompanied or replaced by hallucinations, the most common of which are those of vision. One patient perceives at the beginning of the attack a toothed wheel, in the middle of which there appears a human face making strange contortions; another sees a series of smiling landscapes. In some cases it is the sense of hearing which is affected,—the patient hears voices or strange noises. Others are warned by the sense of smell that the fit is going to commence. In some cases the epileptic fit may be replaced by a period of mental excitement."

Dr. Raab† has described three cases of epilepsy, where between the attacks there was a state of religious delirium without hallucinations, imaginary intercourse with God and Christ, and he cites two similar observations of Loeb. Dr. Adolph Kühn‡ also describes three cases which he saw in the House of Correction at Moringen. Two of these were undoubtedly subject to epilepsy; the other probably so. There was a sudden appearance of twilight, with anxiety and apparitions, which lasted from two to three minutes. After the complete return of consciousness there was a full recollection of what they had seen. He believes that these hallucinations took place in substitution of ordinary epileptic attacks.

Dr. Howden,§ a physician of great experience in insanity, has remarked that in epilepsy there is often an exaltation of the religious sentiments, generally without any corresponding strictness in morals. Dr. Toselli|| says that of all diseases

* See "Leçons sur les Maladies Mentales," par B. Ball, Professeur à la Faculté de Médecine de Paris. Paris, 1880-1883, p. 504.

† *Der Irrenfreund*, No. 10, 1883.

‡ Cited in *Centralblatt für Nervenheilkunde*, No. 13, 1883.

§ "The Religious Sentiment in Epileptics," by James C. Howden, M.D., Medical Superintendent, Montrose Royal Lunatic Asylum, *Journal of Mental Science*, January, 1873.

|| "Sulla Religiosità degli Epilettici," Studio di Enrico Toselli, *Archivio Italiano*, Anno xvi., Fasc. ii. Milan, 1379.

epilepsy is the one in which morbid manifestations of the religious statements are oftenest observed. All the writers who treat of the intellectual and moral disorders of epileptics have commented on their morbid religiosity, which is all the more remarkable as it is often in contrast with their habitual conduct, some of them being vicious in the highest degree.

Of this religious disposition Dr. Howden gives some instances, one of which is of interest in the present inquiry :—

“A gardener, aged forty-seven, who had several severe epileptic fits, but otherwise strong and healthy, started in his sleep, and said that he was dying. Next day he was sure he was dead, and that his soul was in heaven; again, he would complain of great weakness, and say that he was dying; always, however, his conversation was of a religious character. Next day he was sure he was dead, and that his soul was in heaven, and in perfect happiness. He continued in this belief for two days; but on the third day he believed soul and body were again united in this world. In a few days he was able to be at his work again, and spoke quite rationally on every subject but that of his vision. He maintained that God had sent it to him as a means of conversion, that he was now a new man, and had never known before what true peace was. He still believed that his soul had been transported to heaven. It was a glorious country, abounding with the most beautiful trees, shrubs, and flowers; the trees were loaded with the most luscious fruit, and the fields waved with the most luxuriant crops.”

One of Dr. Toselli's patients, during his attacks of epileptic vertigo, has visual illusions, which he has sufficient judgment to disregard. Though not habitually inclined to religious exercises while in this state, he has an irresistible impulse to recite a prayer, which arises from a religious sentiment. But the words and the devout action come before the religious sentiment, which then arises in the mind, and is revealed to consciousness. During the stage of religious delirium some epileptic patients receive orders from the divinity—feel themselves invaded by the genius of a prophet or reformer, and hear voices which impel them to acts of unheard-of ferocity. One of his epileptic patients was going to throw himself over a bridge, when the Virgin appeared to him, saying that he was not yet worthy to die. Another time, he was going to kill his

own son, when a sudden inspiration and religious hallucination kept him back.

We do not seek to explain the nature or success of Mohammed's mission by his epilepsy. These lie in the character of the man and the circumstances of the times ; but we think that the starting point of his hallucinations came through the nervous disorder which affected him, and of which the epileptiform fits were the visible proof. It was this which held before his eyes, and made to sound in his ears, the hallucinations which led him to believe that he had a message from God. Without this, no amount of religious fervour or abstract monotheism would have made him take such a view. The message once granted, each step becomes easy. We are inclined to believe that the fits were rather rare, as a frequent succession of them would be fatal to an active and difficult career ; yet Mohammed had to encounter much opposition, both before the flight to Medina and after it. He showed great activity in war ; he led twelve military expeditions, underwent much exposure, and was many times in extreme danger. Setting aside his claims to divine communications, there is no proof that he was in the least deranged. He evidently possessed an intellect of the highest order for managing and controlling affairs, and was skilful both in conducting war and treating with his adversaries. It is common in works about insanity to repeat the statement that Julius Cæsar and Napoleon Bonaparte were both epileptics. What we know about Cæsar seems to rest on the authority of Suetonius,* who says that Cæsar had good health, except that towards the end of his life he would suddenly swoon away, and was frequently terrified in his sleep, and that he was twice seized with epilepsy while transacting business. Plutarch mentions a report that Cæsar had a fit during the time the battle of Thapsus was fought, but this was one of his last battles. It is likely that these fits came on towards the close of his life, for a man subject to repeated attacks of epilepsy could never have run the great career that Cæsar did, though it is possible that had the

* *Valetudine prospera, nisi quod tempore extremo repente animo linqui atque etiam per somnium exterreri solebat. Comitiali quoque morbo bis inter res agendas correptus est.*—SÆTONIUS xii. Cæsares, cap. 45.

daggers of Brutus and Cassius not abruptly ended his life, the splendid intellect of Julius might have sunk into insanity, perhaps after a period of extravagance and furious tyranny like that of his successor Caligula, who, from the description of Suetonius, was an epileptic lunatic.

As for Napoleon, the testimony of Bourrienne seems to me decisive—

“It has been everywhere said that he was subject to epilepsy ; but during more than eleven years that I was constantly with him, I have never seen in him any symptoms in the least degree indicative of that malady.”

It has been objected to this, that Bourrienne saw little of Napoleon after 1804, but the *Memoirs of Madame de Remusat* and of the Prince Metternich continue our knowledge of Napoleon's private life. They make no mention of epilepsy.

Weighing all the testimony that remains to us together, it seems likely that Mohammed, at the commencement of his mission, was subject to hallucinations of hearing and sight, which, taking the tone of his deeply religious feelings, and his dislike to the idolatry and polytheism of the people of Mecca, were interpreted by him as messages from God. In this belief he was prompted and encouraged by his wife, Kadija, and some of his relations, and was thus induced to commence his remarkable course of apostleship. How far these hallucinations accompanied the remaining twenty-one years of his life it would be difficult to say. There are some reasons to believe that they became less frequent after the flight to Medina ; but it is evident that after his claim to divine inspiration was fairly settled by himself and admitted by others, he would be disposed to regard his dreams and omens, and the impulses of his own thoughts and feelings, as so many signs from Allah, whose messenger he believed himself to be.

Behind all these delusions, there was a keen and powerful intellect, well acquainted with the passions and motives which most act upon men, and gifted with a wonderful power of forcible speech ; and if Mohammed is to be called insane, his insanity was of a very rare type. It is one thing to

account for a succession of hallucinations, occurring without order or purpose in a man whose conduct shows his brain to be deranged, and quite another to account for a series of visions or hallucinations, each going to support a revelation of a systematic character. The hallucinations of Mohammed took a definite shape and sequence, adapting themselves to difficulties, opposition, and criticism, in the end working out a religion which, from its rapid extension and durability, must have been well adapted to the races who have made it their own. It seemed as if there were some one behind, directing the hallucinations or delusions of Mohammed, or arranging them so that they should produce a given effect. Sir William Muir suggests that the prophet yielded to the suggestions of the devil. Sprenger, who laughs at his fellow-biographer, remarking that, if people still believe in a personal devil, there is no reason why they should not give him something to do—nevertheless is evidently much at a loss for a personage of this kind to help out his theory; for though he affirms that Mohammed was subject to hallucinations and what he calls hysterical attacks, he abandons the theory again and again to accuse the prophet of deceit and trickery, and pious and political frauds.

It is admitted that a man can habitually have hallucinations without being insane. It is often said that, if the man recognises the hallucination to be something unreal, he may be sane; on the other hand, if he believe and act upon the hallucination, that he is insane. Much, however, must depend upon what a man's preconceived opinions are. One brought up from his childhood to believe in ghosts will take any figure he sees in the dark for a spectre, if it appear at an hour or in a situation when and where no man could be expected to be. In the same way a man who believes that angels are in the habit of appearing to men would not take up the idea that a similar apparition to himself was a mere hallucination. Mohammed had heard of many apparitions of angels to the old Hebrew prophets, he believed in djins, and bad and good spirits; his mind had outgrown the polytheism and idolatry of Mecca; he was deeply religious, and felt himself in possession of truths which raised him above

the stupid idolatry of his fellow-citizens. He knew nothing about the physiology of the brain, but he believed that a man could be deceived by bad spirits, and, doubtful whether this might not be his own hap, he took the opinion of those whom he loved and trusted most. Viewed in this way, I cannot call him insane.

In ancient times, and amongst half-civilised nations, things were done in the name of religion which none but men of the weakest mental structure would now do ; but the rule we would apply to the one time will not hold good for the other.

If to claim to be an inspired prophet be a sufficient proof of insanity, then of course Mohammed was insane ; but if this be not assumed, on what grounds can such an imputation be made good against the son of Abdallah ? If we had an account of him written by Abu Sophian, or some of his other opponents, no doubt the unfavourable points of his character would be brought out ; but, as far as the accounts of his friends go, he appears to have possessed a great deal of *savoir faire*. His manner of speaking and acting impressed even his enemies very favourably. The Koran is his undoubted work, and though it seems to me, through a translation, an irregular and often tiresome production, it certainly affords no proof of insanity. A claim is persistently put forward by the Mussulman, originally stated by Mohammed himself, that the composition of the Koran bears in itself the impress of divine wisdom. Truly, if the Iliad and the Odyssey were produced without divine inspiration, Mohammed had need of no such help in composing the Koran !

Looking only at broad results, one may say that Islam is the only religion which has ever succeeded in displacing any form of Christianity. Interposing between the Christianity of the West, and the Hinduism, Buddhism, and rude Paganisms of the East, from which it drew many converts, Mohammedanism has everywhere formed a barrier against the spread of the Gospel. On the other hand, Christianity has never succeeded in making any considerable number of converts from Mahomedanism, even by the direst persecution. Lands overspread by the Mussulman have again become Christian, not by any preaching or conversion, but simply by pushing back or

expelling the Mahomedan population. The Saracens were chased from Sicily; the Moriscoes were banished from Spain; and the Turks driven away from Greece and Roumania. Even at the present time the missionary power of Islam is shown by millions of new converts among the black races of Africa. There is nothing in the organisation of Mohammedanism to account for this. It has not even a separate priesthood. It must therefore contain something more attractive to the Oriental mind than other forms of faith, not necessarily more of truth, but something more prepossessing to human nature as it was, or is, in these countries. The stern simplicity of Mohammed's creed helped to enforce acceptance,—one personal God without any obscuring distinction of His manifold nature, or any pantheistic confusion between the creating and the human mind or the forces of nature. The Athanasian creed has ever been a stumbling block in the way of missionary Christianity, as it was to the first barbarian converts, the Goths and Vandals, who showed a preference to the heresy of Arius.

It is not a sufficient explanation of the success of Mohammed's mission that it was spread by the sword. Christianity spread through the Roman world, and grew strong under persecutions much crueller than were ever dreamed of by the Caliphs. It cannot be denied, however, that the early victories of the followers of the prophet bore an important part in gaining proselytes. To most men there is something divine in success. Mohammed awoke the old hereditary martial instincts of the paganism of antiquity, which had been much weakened by Christianity. From an early time in the Christian Church the love of women had been proscribed as something inconsistent with the highest virtue, a species of stain, if not of defilement to the saintly ideal. At the commencement of the Hejira, Syria and Egypt were full of monks and nuns and hermits who exalted an incomplete life as the highest fulfilment of duty, and assumed a superiority over those who handed down the lamp of life to other generations. Against such asceticism Islam came with the full force of a reaction in favour of nature. Instead of regarding as a weakness or a sin the enjoyment of the highest pleasure most men could know, Mohammed promised a continuation of it in paradise to the

faithful. The forbidding of wine, owing perhaps to the delicate nervous organisation of the prophet, made Mahomedanism a safer doctrine to preach to uncivilised tribes. Then his threats of judgment and hell were terrific.

Though the historical evidences of the truth of the Koran are of the weakest, sceptics have always been rare amongst educated Mussulmans. To searchers for truth, it is difficult to understand why God lets error prevail, but in all widespread traditional error there seems a mixture of living truth. The strangest thing is, how much the falsehood helped the truth, for had Mohammed been without delusions, and simply reasoned on virtue and the unity of God, he would never have seen a single idol broken in the Kaaba. Having myself lived for years amongst Mahomedans, I know that their creed is not inconsistent with a good and unselfish life. As General Gordon says, "I like the Mussulman; he is not ashamed of his God; his life is a fairly pure one."

Swedenborg, who made even more decided claims than Mohammed to hold communication with another world, and, indeed, said in so many words, that he could converse with angels and the spirits of men in heaven at his pleasure, seems to have fallen into fits of reverie or trance. A Description of Swedenborg's first revelation is given in the "Dreams." It occurred at the Hague, on the 6th and 7th of April, 1774.*

"At ten o'clock I lay down in bed, and was somewhat better; half an hour after I heard a clamour under my head; I thought that then the tempter went away; immediately there came over me a rigour so strong from the head and the whole body, with some din, and this several times. I found that something holy was over me. I thereupon fell asleep, and at about twelve, one, or two o'clock in the night there came over me so strong a shivering from head to foot, as if many winds rushed together, which shook me, was indescribable, and prostrated me upon my face. Then, while I was prostrated, I was in a moment quite awake, and saw that I was cast down, and wondered what it meant. And I spoke as if I was awake, but found that the word was put into my mouth, and I said, 'Omnipotent Jesus Christ, as of Thy great grace Thou condescendest to come to so

* This passage is taken from "The Literature and Curiosities of Dreams," by Frank Seafeld, M.A. London, 1865.

great a sinner, make me worthy of this grace!’ I held my hands together and prayed, and then came a hand which squeezed my hands hard; immediately thereupon I continued my prayer.”

Swedenborg was observed by his friend Sprenger, in an inn, raising the hands towards heaven, and moving his body about. He spoke a great deal for half an hour, and then let his hands fall, and cried, “My God;” then he lay quiet. They asked him if he were unwell. He said, “I had a long conversation with the angels and with my heavenly friends, and am now quite wet with perspiration.”

One day, in his own house, he fell into an ecstatic state, and two Jews who were with him, thinking that he was insensible, took a gold watch from him; but he asked it back when he came out of the trance. On another occasion, General Tuxen noticed him in a state of reverie, his face leaning on his hands with his elbows on the table. On speaking to him he came to himself, but seemed confused and agitated. Swedenborg himself gave a strange description of his feelings when the angel appeared to him in London, and told him not to eat so much. He felt as if a mist streamed out at the pores of his body that was quite visible, and fell upon the ground, where a carpet appeared, upon which the mist gathered and changed itself into worms of all species, which were instantly burnt up. A fiery light appeared in their place, and a crackling was heard. Swedenborg, in his voluminous writings, lets it be easily seen how all the faculties of his mind were allowed to conspire in the work of self deception. He saw hidden meanings in the Scriptures where no one else would or could have done so; he remembered his successful guesses and forgot his failures; he confounded his dreams with his visions, and finally lost the distinction between the real and the ideal.

But it would be taking up time in an unjustifiable manner to go on comparing the Swedish mystic with the Arabian prophet, especially after the able articles on Emmanuel Swedenborg, by Dr. Maudsley, in the *Journal of Mental Science*.*

It is possible a careful study of the lives of other religious

* See the numbers for July and October, 1869.

pretenders might help us to some useful generalisations; but such an undertaking would be very difficult, for the origin of old religions is generally lost in an uncritical antiquity, and the presence of philosophical observers will ever be a hindrance to the appearance of new ones.

If Luther did not profess to found a new religion, he was at least the leader of a great religious movement. As is well known, he was subject to delusions about the devil; nor is this very difficult to explain. Though gifted with extraordinary penetration of mind, a learned scholar, and a keen critic upon books, he had in common things all the superstition of a Saxon peasant. Of anything like physical science he was entirely ignorant, and his observations of the external world were merely used to give illustration to his preachings and controversies. One of the commonest sources of errors in speculation is for men to attribute things they are unacquainted with to causes of which they know something, or think they know something. Luther's attention was entirely directed to the operations of the mind, the aspirations and struggles of the soul, and the political changes of the time; hence he gave psychical explanations of physical events. One day, when there was a great storm abroad, Luther said, "'Tis the devil who does this; the winds are nothing else but good or bad spirits. Hark! how the devil is puffing and blowing,"* Then again, "Idiots, the lame, the blind, the dumb, are men in whom devils have established themselves; and all the physicians who heal those infirmities, as though they proceeded from natural causes, are ignorant blockheads, who know nothing about the power of the demon." It is well known that he wished a Cretin to be thrown into the Moldau on the theory that the Cretin was a fabrication of the devil.

The credulity of this great man on everything connected with the devil is very strange to men of this time. One-tenth of the critical power which was lavished upon the theses of Wittenberg, or the claims of the Apocalypse or the

* These quotations are all taken from "Michelet's Life of Luther," translated by William Hazlitt. London, 1856. See pp. 321, 338, 339, 208, 430, 102, 318.

Epistle of St. Jude to rank as canonical books, would have made him distrust the silly stories about the devil which are so prominent in his Table-talk. But he was a man of very powerful imagination, and subject to neurotic affections, which, as usual, he put down to diabolical agency. On his pilgrimage to Rome (1510) when he was no older than twenty-seven, he was troubled with giddiness and sounds in the ears.*

"This toothache and earache I am always suffering from (says he) are worse than the plague. When I was at Coburg, in 1530, I was tormented with a noise and buzzing in my ear, just as though there was some wind tearing through my head. The devil had something to do with it.

"A man was complaining to him one day of the itch; said Luther, 'I should be very glad to change with you, and to give you ten florins into the bargain. You don't know what a horrid thing this vertigo of mine is. Here, all to-day, I have not been able to read a letter through, nor even two or three lines of the Psalms consecutively. I have not got beyond more than three or four words, when buzz, buzz, the noise begins again, and often I am very near falling off my chair with the pain. But the itch, that's nothing; nay, it is rather a beneficial complaint."

In 1530 he writes :—

"When I try to work my head becomes filled with all sorts of whizzing, buzzing, thundering noises, and if I did not leave off on the instant I should faint away. For the last three days I have not been able even to look at a letter. My head has lessened down to a very short chapter; soon it will be only a paragraph, then only a syllable, then nothing at all. The day your letter came from Nuremberg I had another visit from the devil. I was alone, Vitus and Cyriacus having gone out, and this time the Evil One got the better of me, drove me out of my bed, and compelled me to seek the face of man."

This is a very good description of what has been sometimes called irritability of the brain. The incapacity for mental exertion is frequently accompanied with hyperæsthesia. In his last illness he writes :—

* Die nervösen Beschwerden des Dr. Martin Luther, von Dr. Berkhan. *Archiv. für Psychiatrie*, Berlin, 1881, p. 799.

"I take it that my malady is made up—first of the ordinary weakness of advanced age; secondly, of the results of my long labours and habitual tension of thought; thirdly, above all, of the blows of Satan. If this be so, there is no medicine in the world will cure me."

It seems to me an error to say that he wished it to be understood that the devil appeared to him and disputed with him about the mass. The truth is, he was accustomed to refer all the evil thoughts that came into his head to the suggestions of the devil, and it is in this sense that he writes: "I awoke suddenly at midnight on one occasion, when Satan began to dispute with me in the following terms" (here followed a long argument about the mass).

During his strict retirement in Wartburg Castle his mind was in a very excited state. I believe that there is no contemporary authority for the story of his throwing the inkstand at the devil, though, as is well known, the mark is still shown on the wall of the chamber he occupied, but the following is an instance of a hallucination of sight, if not also of hearing:—

"When, in 1521, on my quitting Worms, I was taken prisoner near Eisenach, and conducted to my Patmos, the Castle of Wartburg, I dwelt far apart from the world in my chamber, and no one could come to me but two youths, sons of noblemen, who waited on me with my meals twice a-day. Among other things, they had brought me a bag of nuts, which I had put in a chest in my sitting-room. One evening, after I had retired to my chamber, which adjoined the sitting-room, had put out the lights and got into bed, it seemed to me all at once that the nuts had put themselves in motion, and jumping about in the sack, and knocking violently against each other, came to the side of my bed to make noises at me. However, this did not alarm me, and I went to sleep. By-and-bye I was wakened up by a great noise on the stairs, which sounded as though somebody was tumbling down them a hundred barrels one after another. Yet I knew very well the door at the bottom of the stairs was fastened with chains, and that the door itself was of iron, so that no one could enter. I rose immediately to see what it was, exclaiming, 'Is it thou? Well, be it so!' and I recommended myself to our Lord Jesus Christ, of whom it is written, '*Thou hast put all things under His feet*' (Psalm viii.), and I returned to bed. The wife of John Berblibs came to Eisenach. She suspected where I was, and insisted upon seeing me,

but the thing was impossible. To satisfy her, they removed me to another part of the castle, and allowed her to sleep in the apartment I had occupied. In the night she heard such an uproar that she thought there were a thousand devils in the place."

It would appear that any noise he could not account for was attributed to Satan, who was perpetually haunting him.

"Once in our monastery at Wittenberg (said he) I distinctly heard the devil making a noise. I was beginning to read the Psalms, after having celebrated matins, when, interrupting my studies, the devil came into my cell, and thrice made a noise behind the stove, just as though he were dragging some wooden measure along the floor. As I found he was going to begin again, I gathered together my books and got into bed. . . . Another time in the night I heard him above my cell, walking in the cloister; but as I knew it was the devil, I paid no attention to him, and went to sleep."

Utterly worn out by his ceaseless labours of controversy, preaching, writing, and organising his Church, Luther died at the age of sixty-three.

There is no proof that the delusions or hallucinations to which the German reformer was subject did in any way alter or modify his religious views. It is, however, easy to imagine circumstances under which they might have done so, and led Luther to become the founder of a new religion.

PAPER III.

ON THE CHARACTER AND HALLUCINATIONS OF JOAN OF ARC.

AS we learn more of the influence of external circumstances and physical conditions on human belief and conduct, the records of the past are read in a new light. As science shows us the relation of events previously unknown, we see more surely how things really occurred. What was perplexing becomes clear; embellishments and additions fall off; and we are confirmed in the belief that the past was governed by the same laws as the present. Thus the knowledge of nervous diseases, and the experience gained by the study of hallucinations, illusions, and the errors and deceptions of the human mind, may explain some of the difficult problems of history.

In considering the claims of Joan of Arc to have been inspired by heaven, from a psychological aspect it seems to me necessary to recall as much of her history as will illustrate the nature of these claims, and their effect upon a credulous age. Even the bare narration of many of the leading events of her life, so strangely mixed up with the superstitions of the times, will show the complete change which has taken place in our views of the supernatural. Events like these can never again occur in Europe, for the conditions under which they occurred will never return. The part played by this memorable heroine is unique in history.

The infant son of Henry V. of England and of the French Princess Catherine had been proclaimed King of France, and at this time it was thought likely that he would really inherit the throne of his grandfather, though, as events proved, he only inherited his insanity. The English, in alliance with the Duke of Burgundy, had made the claims of their young prince to be

acknowledged by well-nigh all France north of the Loire. They had been besieging Orleans for seven months. The Dauphin, son of Charles VI., was living in the castle of Chinon, with a scanty and precarious revenue, deserted by most of the great nobility. An attempt to effect a diversion in favour of the beleaguered town had ended in a severe defeat. It seemed left to its fate, and it was generally thought that it would fall in the end. The armies of England and Burgundy would then be free to cross the Loire, and drive the Dauphin from the southern provinces, which still acknowledged his right. We read in the chronicles of the times that the prince himself meditated leaving France in the hands of his enemies, and seeking refuge in Spain or Scotland. When no one expected it, the tide of affairs, which seemed driving his cause to ruin, was turned to his triumph, and the most successful soldiers in Europe were put to flight by a peasant girl of eighteen years of age. Town after town was recovered to his rule, and Charles VII. was triumphantly crowned in the sacred seat of his ancestors, which a few months before seemed hopelessly in the power of his enemies.

The means by which this marvellous revolution was accomplished were simple enough,—an appeal to passions and beliefs universally existing in a credulous age. For thirteen years France had been laid waste by the ferocity of the English invaders, and the fury of civil war. One disaster had followed another; the minds of the people were deeply stirred. There was a prophecy diffused among them that France, after being laid desolate by a woman, should be restored by a virgin. The woman was Isabella of Bavaria, the Queen-mother, who had taken the side of the English; and it appears that the virgin was for some time thought to be Margaret, the infant daughter of James the First of Scotland,* who had been

* See the "Life and Death of King James the First of Scotland" (printed for the Maitland Club), 1837, pp. 6 and 7. See also vol. iii., p. 340 of "Procès de Condamnation et de Réhabilitation de Jeanne d'Arc dite la Pucelle, publiés pour la première fois d'après les Manuscrits de la Bibliothèque Royale suivis de tous les documents historiques qu'on a pu réunir, et accompagnés de notes et d'éclaircissements, par Jules Quicherat. Paris, 1841." This work, in five volumes, published by the Historical Society of

betrothed to the Dauphin's son, an event which had perhaps excited the hope of a new contingent of those Scottish warriors who had kindled a gleam of hope through France by the victory of Beaugé, where the brother of the English king had been slain. The prophecy was actually quoted by Joan of Arc herself, when she was trying to persuade Robert of Baudricourt to send her to the Dauphin, and no doubt it had a great effect in converting the inhabitants of Vaucouleurs to assist the wonderful peasant girl on her strange mission.

Joan was born at Domremy, on the borders of Lorraine. Her father and mother were labouring people. All her early associates belonged to the peasant class. She had three brothers, and at least one sister, who grew up. Her parents bore a good character; but Joan, though apparently instructed in religion, could neither read nor write. At an early age she was sent to keep sheep, and, as she became stronger, went to work in the fields with the plough and graipe. Those who remembered her said that she was skilful at sewing, was kind to the poor, simple and modest, and very devout at religious exercises. The people of Domremy took the side of the French; the neighbouring village of Marcey held for the Burgundians. The boys of the two hostile villages often used to fight, and come back hurt and bleeding. The inhabitants of Domremy had to leave their village for four days for fear of their lives. Amidst the excitement of these painful events Joan grew up to womanhood. According to her own statement, given in the notes of her trial, she first heard a supernatural voice when she was thirteen years old.

France, is so complete that it will be needless to cite any other books on the subject. M. Quicherat has shown great learning and diligence. The notes supply all the information needed to elucidate the text, and there is an excellent index.

Out of the materials thus furnished has been written "The Life and Death of Jeanne d'Arc, called the Maid," by Harriet Parr, in two volumes. London, 1866. The authoress has shown much skill in seizing upon the striking and picturesque scenes in the life of the heroine. The narrative is vivid; but there is no attempt at psychological analysis.

In the standard histories of England there are many incorrect and careless statements about Joan of Arc. Of all accounts which I have read, the narrative of Michelet is the most correct.

When she heard the voice she was much afraid. It was about mid-day, in her father's garden. She had fasted the day before. The voice appeared to come from the right side, towards the church. She seldom heard a voice without seeing a light, generally a bright one. The light came from the same side as the voice. When she was in a grove she could hear voices approaching her. She was fond of hearing bells, and the voices of saints and angels mingled with their chimes. As most of the process is given in Latin, we rarely know what were the original words which Joan fancied to be sounded in her ears. In one place it is said that she often heard: "Fille Dé, va, va, va; je serai á ton ayde; va"—"Daughter of God, go, go, go; I will aid you; go." This might readily be suggested by the sound of the bells, as in the old story of "Turn again, Whittington, thrice mayor of London," or in the words of a royal poet her contemporary:—

"Such a fanatasye
Fell me to mynd, yt ay me thot the bell
Said to me, Tell on man, quhat the befell."*

It would seem most probable that the first sounds heard by Joan were short sentences like these; but we learn from her own recollections that it was revealed to her in the first vision that she was to go to the rescue of France.

In a letter of Perceval de Boulainvilliers to Philip Visconti, Duke of Milan, dated 21st June, 1429, there is an account of Joan, which was probably taken from original observation—for Boulainvilliers held a high office at the court of the Dauphin. He writes that the first revelation made was when Joan was twelve years of age. She agreed to try a race with some of her companions. She ran with such swiftness that one of the girls cried, "Joan, I see you flying over the ground." She stopped to take breath at the end of the meadow.

She thought she heard a boy's voice saying, "Joan, go home, for your mother needs you to help her." Thinking it must be her brother, or some other boy, she hastened home.

* "The King's Quair." A Poem: By James the First, King of Scots. Canto i., xi.

Her mother asked her why she had left her sheep, to which the girl answered, "Did you not send for me?" Her mother said, "No." Then, believing herself mistaken about the boy, and wishing to return to her companions, suddenly before her eyes a bright cloud or haze appeared, and from the cloud a voice came, saying: "Joan, you must lead another life, and do wonderful actions, for it is you whom the King of Heaven has chosen for the succour of France, and the help and protection of King Charles expelled from his dominions. You will put on male attire, and, taking arms, will be the leader of war. All things will be ruled by your counsel." It seems likely enough that these two accounts reproduced different circumstances of the same story, for Joan may have thought that the first voice, calling her to her mother, was not worth mentioning; or it may have been suppressed in the truncated notes of her trial.

These visions returned again. The angel Michael brought with him St. Catherine and St. Margaret, who often visited her. She knew their voices, which were gentle and sweet, said that she had embraced and kissed them, and felt that they had a good odour. They exhorted her to lead a pure life, and to go to mass, and she made a vow of virginity to them. At her trial a great many questions were put to her about the appearance of these angels and saints, whether the angel wore a crown? and whether he had hair beneath it? and whether the hair was long or short? or whether the saints had rings in their ears, or wore dresses of the same cloth? When it came to such particulars Joan refused to answer, sometimes saying she was forbidden to answer, perhaps because the visions had a vague form, or that she feared some snare under their captious questioning. A few months before Joan's trial a woman in Paris had been burned because she said that the maid was doing the will of God, and that she herself had seen God, and that He wore clothes, which was treated as blasphemy. Joan, however, firmly maintained the reality of the apparitions. She said that Michael had the form of a proper man. "I saw them," she said to her judge, "with my own eyes, as plainly as I see you; and when they retired from me I wept, and much I wished that they would

take me with them." She kissed the ground over which they had passed. Joan told no one of these visions, not even her confessor; but apparently her parents had their surmises or fears, for about two years after her first vision, when she was about fifteen, her mother told her that her father had dreamed that their daughter would go away with armed men to France. He told her brothers that he would rather she were drowned than that this should happen to her. She said that her father and mother watched her, and kept her in great subjection, and that they almost lost their senses when she went to Vaucouleurs. She said she never disobeyed them save in the case of the young man who wanted to marry her. He summoned her to the court at Toul, saying she had promised to marry him, which she denied on oath. The voices told her that she would gain her process. Apparently this young man had seen Joan at Neufchateau, where she had gone for fifteen days to live with a woman who kept an inn. Her enemies made a good deal of this residence at the inn, saying that she used to take horses to water, and thus learned to ride. It is not very clear how she learned to be so expert at riding, as it seems she was, when she appeared before the Dauphin at Chinon.

As time wore on the tumult of war came nearer and nearer, and the prolonged siege of Orleans kept the whole of France in a state of excitement. The voices told her twice or thrice a-week to go to Robert of Baudricourt, the commandant at Vaucouleurs, and that he would help her.

She went to live with her uncle, who took her to Robert of Baudricourt. At first he was amused at her simplicity, and incredulous of her visions; but the voices encouraged her, and she gained some converts among the people of Vaucouleurs, so that when he received her favourably, after twice sending her away, the people brought her a horse, and got male attire made for her. Joan had an interview with the Duke of Lorraine, and Robert of Baudricourt sent her with six men with a letter to the Dauphin at Chinon. It was a long and dangerous journey through a country infested by the enemy. She arrived at Chinon on the 6th March, 1429. We can understand the feeling of the Dauphin on receiving this strange

message. Here was a peasant girl of eighteen years of age, dressed like a man-at-arms, proclaiming that she had a revelation from on high to go and relieve Orleans and deliver France. Mere acquiescence would not do ; she must have an army and convoy with her.

She is said to have singled out the Dauphin amongst his courtiers, although some one else was deputed to play the king. At her trial Joan stated that she was enabled to do this by a voice which revealed the prince to her. Joan is described as being tall and comely, with dark hair, having a graceful and modest demeanour, and a sweet voice, generally speaking little, of a cheerful countenance, but readily moved to tears. She showed great power of enduring fatigue, and from the beginning seemed skilful at riding and in the use of weapons. She was repeatedly examined during three weeks by different dignitaries of the Church and doctors of theology, first at Chinon and then at Poitiers. The examination at Poitiers lasted three weeks, and was committed to writing. Unfortunately it could not be found when the information for her rehabilitation was taken. In the resumé which still remains to us, it is stated that the king had made inquiry about the life, birth, manners, and designs of the said maid, and had kept her near him for about six weeks, so that all people might observe her, whether learned men, ecclesiastics, religious people, soldiers, wives, widows, or others. Both in public and in private she has conversed with all people ; but in her they find no evil, nothing but goodness, humility, virginity, devotion, honest simplicity ; and of her birth and her life some marvellous things are told. The king asked her for a sign, as Ahaz did of God ; but she said that she would show it before Orleans, and in no other place, for so God had ordered. They ought therefore to let her go to Orleans with her soldiers, hoping in God, for to doubt or to abandon her without appearance of evil would be to offend against the Holy Ghost, and make themselves unworthy of the aid of God, as Gamaliel said in his counsel to the Jews concerning the apostles.

From Chinon she sent a letter asking the priests to seek for a sword which was under the ground near the altar of St. Catherine of Fierbois. An armourer of Tours was sent on

this errand, and a rusty sword was found near the place indicated. On the sword being cleaned, the priests said that the rust fell off with a readiness which they were willing to regard as supernatural. The sword was used by the maid till the siege of Paris, when she broke the blade on the back of a courtesan who was following her men-at-arms. One of the chroniclers says that Joan had never been at the Chapel of Fierbois; but she herself stated in her trial that she had passed through this place, and had heard mass at the chapel, when it is likely that she had learned or guessed that some arms were under the pavement, as it was common to bury armour and swords with the dead. The weapon had five crosses engraven on the blade, and Joan claimed that her voices had revealed this to her.*

Most historians mention this fact without any comment, and indeed it is difficult to give any reasonable explanation of it.

The convoy entered Orleans without the English daring to oppose her. The surprising events that followed are related in every history of France.

The following passage from the "Journal of the Siege of Orleans," written by an eye-witness, describes her first appearance in the beleagured city:—

"She entered in complete armour, mounted on a white horse. There was carried before her a standard which was also white, and on it was painted the image of Our Lady having two angels holding each a lily in their hand. Thus she entered into the town, having on her left side the Bastard of Orleans armed and mounted very richly, and after her came several other noble and gallant gentlemen, esquires, captains, and men of war. On their side came to receive her the soldiers, citizens, and women of Orleans, carrying a great number of torches, and making as much joy as if they saw God descending amongst them, and not without cause, for they had endured much weariness and, what is worse, a great doubt of being relieved, and a fear of losing their lives and goods; but they felt indeed comforted, and as if the siege were already raised by the Divine virtue that was said to be in the simple maid, whom they

* Respondit quod erat in terra, rubiginosus, habens quinque cruces; et hoc scivit per voces suas, Tome i. 235. See also iv. 129.

looked at very affectionately, both men and women, and little children. There was such a press round about her in order to touch her, or the horse on which she sat, that some one bearing a torch came so near her standard that the cloth caught fire, so she spurred her horse and turned it as dexterously to the flag and put out the fire as if she had long followed the wars, which the men-at-arms much wondered at, and the citizens of Orleans too. They accompanied her through the town cheering lustily, and conducted her with great honour to the house of Jacques Boucher, who was treasurer of the Duke of Orleans, where she was received with great joy, with her two brothers, and the two gentlemen and their page, who had come with them."

Three of the English bastiles or forts were carried by assault, and their army was in full retreat in ten days after the holy maid appeared with her awe-inspiring standard. The French believed her to be a prophetess; the English feared her as a witch. Knights and warriors gathered to fight under her banner, and this girl of eighteen sat at councils of war, and quoted her miraculous voices against the opinions of Dunois, Alençon, and La Hire.

When we remember that she was only an ignorant peasant girl of eighteen years of age it is astonishing how well she played her part. Before the court at Chinon, before the doctors of theology at Poitiers, with the armed convoy at Orleans, and in the battles and sieges which followed, Joan had ever sustained and increased her reputation. To use the words of an old chronicler,* "She rode always in complete armour, as much or more than any captain of the time, and when one spoke of war, or putting troops in order, she made it to be heard and seen that she knew what she was about, and when the cry of arms was sounded she was the first and readiest, whether on foot or on horseback." In the *procès de réhabilitation* we have the testimony of the renowned generals under whom the English were driven out of France, taken about twenty-five years after the death of the heroine. The Duke of Alençon, who bore her a warm friendship, said that in war she acted as cautiously and prudently as if she had

* Tome iv., p. 248.

been a captain who had borne arms for twenty or thirty years, and that she was especially skilful in the preparation of artillery.

Similar testimony was given by Count Dunois, who stated his belief in her Divine mission. Some very curious testimony was given by Jean d'Aulon, a valiant and worthy gentleman of Languedoc, who was commissioned by the king to attend on Joan, and who followed her everywhere, guarded her in battle, and was taken prisoner along with her. After bearing witness to the purity of her life, and recording his belief that it was impossible that so young a girl could do such deeds without the will and help of our Lord, he said that Joan had told him that when she had on hand some difficult undertaking, her council told her what she ought to do. D'Aulon asked her who were her council? She answered that there were three advisers, of whom one always remained with her; the other went and came often to her, and visited her; and the third was the one with whom the two others deliberated. It happened that once upon a time D'Aulon begged of her that she would show him her council. She answered that he was not worthy nor virtuous enough to behold them, upon which he ceased to speak or inquire about it. From the words used these councillors seemed to be of the male sex. At the attack on St. Pierre-le-Moustier the French were driven back, and D'Aulon was wounded on the heel; but, observing that the maid was almost left alone, he got on a horse and rode towards her, asking her what she was doing there alone, and why she did not retire like the others? Joan, after having taken her helmet from her head, answered that she was not alone, that she had still in her company fifty thousand of her people, and that she would not go away until she had taken the town. D'Aulon was sure that at that time, whatever she said, she had not with her any more than four or five men. This he knew for certain, as well as several others who likewise saw her. She, however, refused to go away, and got the soldiers to lay a bridge over the ditches, and storm the town at this very place.

D'Aulon quoted a speech of hers to the celebrated Dunois: "Bastard! bastard! in the name of God, I command you

that whenever you know of the coming of Falstaff you will let me know; for if he passes without me knowing, I promise you that I will make your head be taken off." There was nothing in the usage of these times offensive in the title of bastard for one who claimed descent from a prince of the blood; but for a peasant girl to use such language to a man of rank, apparently without giving offence, showed what a high tone the maid assumed as a messenger from heaven. D'Aulon goes on to tell that, after retiring to sleep, the maid started up, saying that she had been warned by her council to go against the English, but that she did not know whether to go against the bastiles or against Falstaff, who came to victual them. She made him put on her armour, and rode out to the gate of Orleans. On her way she met a soldier coming in badly wounded, when she said that she never saw the blood of a Frenchman without her hair standing on end. A short time after the bastile of St. Loup was carried by assault.

Despite the coarse abuse of the English, her virginity was beyond dispute; but menstruation seems never to have occurred.* Schiller, in his beautiful drama, "*Die Jungfrau von Orleans*," makes Dunois and La Hire rivals to gain the love of the warlike maid, and there is a striking scene where the amazon shows a tenderness for a vanquished foe, the English leader, Lionel. In the *Procès de Réhabilitation*, Dunois, Alençon, and D'Aulon declared that her conduct

* Dominus Johannes Massieu Curatus ecclesiæ parochialis Sancti Candidi Senioris Rothomagensis dicit et deponit, quod bene scit quod fuit visitata, an esset virgo vel non, per Matronas seu obstetrices, et hoc ex ordinatione ducissæ Bedfordiæ, et signanter per Annam Bayon et aliam matronam de cujus nomine non recordatur. Et post visitationem, retulerunt quod erat virgo et integra, et ea audivit referri per eandem Annam; et propter hoc, ipsa ducissa Bedfordiæ fecit inhiberi custodibus et aliis ne aliquam violentiam sibi afferrent. Tome iii., p. 155. Several other witnesses testified to the same effect. See also iii. 102, and iii. 102 and 209. D'Aulon dit encores plus qu'il a oy dire à plusieurs femmes, qui ladicte Pucelle ont veue par plusieurs foiz nue, et sceu de ses secretz, que oncques n'avoit eu la secrecte maladie des femmes et que jamais nul n'en peut riens cognoistre ou appercevoir par ses habillemens, ne aultrement. Tome iii., p. 219.

repressed every irregular desire, and that they never felt any passion for her. As she was not without personal attractions, they were willing to recognise in this something of the supernatural.

Many instances might be given of the highly-sensitive temperament of the heroine. John Pasquerel, an Augustine monk, who had acted as her confessor, said that when she was wounded by an arrow above the breast at Orleans, she was afraid, and wept. When Glansdale, the English captain, who had coarsely abused her from the bastille, fell into the Loire trying to escape, and was drowned, she began to weep for his soul. When she saw the English soldiers lying wounded, she had great compassion, and would get them a confessor. She herself often heard mass, and went to confession; and tried to get the soldiers to do the same. She tried to discourage gambling, would not suffer profane language, and had the credit of getting La Hire to give up swearing. She had such a horror of plundering that, when a Scotsman told her she had eaten of a calf obtained in this way, she was very angry, and wished to strike the said Scot.

Joan had a truly feminine dislike to the girls who followed the camp. Her enemies accused her of being too proud, and fond of fine armour and trappings.* Save in matters pertaining to war, she was simple and credulous; but no one, whether friend or foe, seems to have thought her insane.

Joan's glory reached its highest point when she led the Dauphin to be crowned at Rheims. Up to this time every thing had gone on as she desired, and as she had predicted. The caution of experienced generals had again and again been overruled by her impetuous call for action. One blow after

* Jean Rogier, in his *Memoirs*, quotes a letter of the Chancellor of France, who was an archbishop, about the taking of Joan of Arc. He says: "Que Dieu avait souffert prendre Jehanne la Pucelle pour ce qu'el s'estoit constitué en orgueil, et pour les riches habitz qu'el avoit pris." Tome v., p. 169.

M. Quicherat quotes from an old chronicle, written evidently by one who favoured the Burgundian party and disliked Joan, that "quant aucun de ses gens mesprenoit, elle fraploit dessus de son baston grans coups, en manière de femme très cruelle." Tome iv., p. 469.

another had been struck, and every blow told. Fortifications, apparently too strong for the force brought against them, had been stormed; seven cities had been taken; and at Patay an English army had been scattered and slaughtered like a herd of deer. The newly-crowned King was urged unwillingly to St. Denis, and a furious assault made upon Paris from noon to sunset.

The martial Maid was wounded by an arrow from the wall, and carried against her will out of the ditch. She wished the assault to be renewed next day, which the Duke of Alençon and others enthusiastically attached to her, were anxious should be done, but the King seemed to have lost courage, and left. Joan and the rest were compelled to follow. She had given out that her voices had revealed that she would lead the King in triumph into Paris; and this was a check which could not fail to raise misgivings in the minds of her admirers, and to strengthen the doubts of those not fully convinced of her heavenly inspiration. From this date, 13th September, 1429, Joan ceased to have the forces of France at her disposal, and was obliged, with Alençon and a few brave knights of France and Scotland, to engage in smaller enterprises. Three or four places were taken from the enemy, but she was obliged to raise the siege of La Charité, because, as we are told, the King did not arrange to send her provisions or money to maintain her company. Envy and jealousy play a large part in human affairs. The simple peasant girl who had done so much for France was adored by the people, who crowded around her to kiss her garments, and soldiers were willing to fight under her banner without pay; but some of the councillors of the French king did not seem even to have the sense to perceive the wonderful power she had set in motion, and disliked her because they thought they were entitled to some of the praise which was lavished upon the holy maid. On the 21st May she threw herself into Compiègne, which was besieged by the Burgundians, and in a sally was surrounded, pulled off her horse, and taken prisoner by some soldiers of John of Luxembourg. She was seen by the Duke of Burgundy, and then sent to Beaulieu, where she remained above two months, when she was removed to the Castle of Beaurevoir. During the six months

she was in the hands of the Burgundians she was very strictly confined, and kept in irons for fear she would escape. The ladies who visited the prisoner teased her to wear petticoats, to which she had clearly a strong dislike ; and one at least of the gentlemen who saw her acknowledged using indecent liberties with the maiden. It does not seem that Charles made any attempt to ransom or rescue her, though he must have known her extreme danger, for the English had proclaimed that they would burn her if they took her, and they had even threatened to burn her herald at Orleans as a messenger from Satan. At last she was sold to the English by John of Luxembourg for a thousand livres and a yearly pension of two hundred more. When she heard of this she threw herself from the tower of Beaurevoir, and was picked up insensible at the foot. She herself said that she could neither eat nor drink for two or three days after. She said that she did this not with the intention of committing suicide, but with hopes of escaping, thinking that it was better to risk death than to fall into the hands of the English. She said that St. Catherine had forbidden her to throw herself from the tower, but had afterwards comforted her and advised her to confess and ask pardon of God, on which she took heart and began again to eat, and soon recovered.

The English took her to Rouen, and the treatment to which she was subjected might have deranged a strong mind. She was heavily chained by the ankles, and fastened to a beam, and watched by a guard of five fellows of the lowest sort, who teased and mocked the poor girl, and several times tried to violate her. On one occasion Joan's cries were heard by the Earl of Warwick, who rescued her, this not being the kind of revenge which he had in view. The men of war made little concealment that they had bought her in order to burn her. The Earl of Warwick, who commanded at Rouen, hearing that she was ill, sent doctors to attend her, because it would be displeasing to the king if she should die a natural death. The king held her dear, and had bought her dear, nor did he wish that she should die unless by the hands of justice, and that she should be burned. The doctors found her feverish, and advised bleeding, and the Earl

was fearful that she might pass away under their hands. Nevertheless, she was bled, and seemed recovering, when one Master John de Estevet entered, who abused her in the coarse terms put by Shakspeare in the mouths of English noblemen, unfortunately quite in keeping with historical truth. This made Joan very angry, and caused the fever to return. We see the same circumspect Earl of Warwick protecting the captive girl when the Earl of Stafford half drew his dagger to strike her because she said that a hundred thousand English could not win France. There was no reason why she should not be treated like other prisoners of war. She had never violated any of the laws of war, and indeed had been more merciful than most of the combatants of the time. Besides there were English prisoners in the hands of the French who might become the subjects of reprisal; or perhaps in the fortune of war Warwick might some day fall into the hands of the enemy, as Talbot, and Scales, and Warwick's own son had done. It was prudent, therefore, to establish some distinction between Joan and other prisoners, and to arrive at this it was necessary to make her go through the form of a trial. The infamy of conducting these proceedings belongs to Peter Cauchon, Bishop of Beauvais—a man who bore, amongst his friends at least, a fine character—along with a judicious selection of abbots, doctors of divinity and of canon law, and other learned and holy personages. The trial was dragged over four months. This girl, who was no older than twenty, and who could not read, but had passed a year in camps, and nearly a year in prison, was subjected to perplexing cross-examinations and insidious questions for six hours a-day. Her answers were put down, though in a somewhat garbled manner, and then fresh questions contrived. Nicholas Loiselleur, a creature of the Bishop of Beauvais, was introduced into her cell, with instructions to pass himself off as a prisoner on the same side as herself, and try to lead her into unguarded disclosures, which were listened to through an aperture in the wall. The same man was afterwards made to act as her confessor. While they sometimes questioned and upbraided her, two or three at a time, no one was allowed to give her counsel, and some members of the court who were thought to favour her had to leave

for fear of their lives. Even the Bishop of Beauvais was accused of being too slack, which he angrily denied, as endangering his hopes of preferment under his English masters. Notes of the process have come down to us, of course much shorter than the actual proceedings, but helping us to realise the unfairness, stupidity, and cruelty of these pompous pedants.

Joan boldly defended the truth of her revelations, even when threatened with torture. She said that she had heard the voices every day in her prison, and that light accompanied the voices. Visions, if they appeared at all, were much less frequent. The angel Gabriel conversed with her on one occasion; the voices told her that it was he. But the voices of St. Catherine and St. Margaret were often in her ears. They told her to answer boldly. Sometimes they came without her asking; sometimes their voices awaked her from sleep; and sometimes the voices were drowned by the noise made by her guards. They told her what to say, and when she prayed to God for them they came immediately. Sometimes the saints would ask God what she should say, and return with the answer. They promised that she should be freed from prison, but in what manner she did not know. "Take everything cheerfully," they said. "Do not distress yourself about your martyrdom, you will come at last into the Kingdom of Heaven."

Manchon, the notary, who was present at the trial, and who took part in translating the proceedings into Latin, examined afterwards at the *procès de réhabilitation*, said that Joan appeared to him to be very simple, though sometimes she answered very prudently, and sometimes simply enough. As far as can now be judged, some of her replies were very skilful. She generally refused to answer questions which were not to the point, or to be twice examined on the same matter. Her woman's wit showed her that these pretended judges were her cruel enemies; but she had a deep veneration for the authority of the Church, of which they claimed to be the representatives.

Her judges evidently believed that she was deceived by evil spirits, who took the form of saints and angels. They had got hold of a story of her consulting with the fairies

under an ancient beech tree, in a grove near her father's house. Under this old tree, where of old the fairies were said to have been seen, the boys and girls of Domremy used to assemble in the spring and summer time to sing and dance, after which they went to drink at a fountain near. Joan acknowledged having danced with other girls under the tree, but she never saw any fairies, nor knew of any one who had done so.

The Court interrogated Joan about her relations with a woman called Catherine of Rochelle, who advanced pretensions similar to her own. This Catherine gave out that a white lady dressed in cloth of gold appeared to her and told her to ask the king for trumpeters and others to go about collecting money to pay Joan's soldiers. She also claimed the power to discover hidden treasures. The Maid told this new partisan to go home to her husband and look after her children; and to make sure, she consulted St. Catherine and St. Margaret about this new claim, who told her that it was madness, and would come to nothing. She slept a night with Catherine to see whether the white lady would come. Catherine told her that the apparition had come when she was asleep. Joan therefore slept during the day so as to be able to remain awake all night. She often asked Catherine whether the white lady would come, to which Catherine answered, "She would come soon."

Perhaps it did not then occur to Joan that she was using a test which might be used against herself; for she could no more make her voices be heard, or her visions be seen, by any one save herself than this adventuress. In fact it is the character of visions in every age that they are only seen by the ghost-seers. This Catherine of Rochelle having fallen into the hands of the English, had denounced Joan as in league with the devil. Another imitator of Joan, called Peronne, was also taken by them.

When pressed by the Court that she ought to give a sign, otherwise she had no reason to claim more credit than Catherine of Rochelle, Joan was led to make obscure references to a sign with which she had been favoured, till she was at last drawn on to make a positive statement, somewhat against

her will—for she said that she had promised to St. Catherine not to speak of this sign. The statement is so strange that it merits consideration as bearing upon her mental condition.

She said that when she was at Chinon the Archangel Michael came, with a great multitude of angels to the house of a woman where she was living, and taking her by the hand led her up to the king's castle, and into the royal chamber, and gave to the Archbishop of Rheims a rich crown of gold, which he placed upon the king's head. She said this was done in the presence of Charles of Bourbon, the Lord of Trémouille, the Duke of Alençon, and several others; and that this crown was still in the royal treasury. Joan herself went into a small chapel near, where the angel followed and then disappeared.

The Court offered to allow her to write to some of the persons she mentioned, to see if they would confirm this statement under their seals; to which she answered, "Give me a messenger, and I shall write to them about this whole trial." On another occasion she was asked to refer to the Archbishop of Rheims about this story of the crown. "Make him come," she replied, "and then I shall answer about this to you, nor will he dare to say the contrary of what I have told you."

As a postscript to the trial, and in the same handwriting, there were some additional notes made by six of the judges who had visited Joan in prison during the few days of depression between her abjuration and her death. These men stated on oath that Joan acknowledged that she herself was the angel who brought the crown to the king, and no other, and that she was the messenger who announced that the king would be crowned at Rheims. Being interrogated whether the apparitions were real, she replied, "Whether they were good or bad spirits, they appeared to me." She said that she heard voices, especially when the bells were sounded, and that the apparitions appeared in great multitude and small quantity, as a crowd of figures of small size; but she could not be got to enter into any defined description.* Three of the witnesses,

* *Inquirebant ab ea utrum verum erat quod ipsas voces et apparitiones habuisset; et ipsa respondebat quod sic. Et in illo proposito continuavit*

one of whom was Loyselleur, the spy, stated their impression that Joan was at that time of sound mind, a question which seems to have received little consideration during her trial and imprisonment. They declared that, up to her very last moments, she persevered in the reality of the apparitions. At the stake she was heard to invoke the angel Michael, though on one occasion, at least, she said she thought they must be bad spirits since they had deceived her with promises that she would be delivered from the hands of her enemies.

Of course she was condemned, and ordered to submit herself to the authority of the Church, and renounce her errors, or she would be burnt that very day. The executioner, or torturer, as he was called, was waiting for her with his cart. Under terror of such a painful death, Joan consented to make a recantation, which apparently was different from the one afterwards published by the court. She was then sentenced to perpetual imprisonment.

The poor maid expected to be put into the custody of the Church, and to have some of her own sex near, but she was sent back to her old prison, and the guards treated her as roughly as before. It had been one of the articles of accusation that she wore a male dress, and she had promised not to resume it. The voices reproached her for her abjuration, and said that she ought to have resisted to the last. The English, on their part, were disappointed that she had not been sentenced to death. In four days it was announced that Joan had put on the old male dress which had still remained in her room.* This was seized upon as a relapse, the judges entered

usque ad finem, et non determinabat proprie (saltem quod audiret loquens), in qua specie veniebant, nisi prout melius recolit, veniebant in magna multitudinem et quantitate minima.—Tome i., p. 479.

Apparebant sibi sub specie quarumdam rerum minimarum—p. 480.

* *Guillelmus Manchon dixit quod tunc erat induta indumento virili, atque conquerebatur quod non audebat se exuere, formidans ne de nocte ipsi custodes sibi inferrent aliquam violentiam atque semel aut bis conquesta fuit dicto episcopo Belvacensi, Subinquisitori, et magistro Nicolao Loyselleur, quod alter dictorum custodum voluerat eam violare; quibus Anglicis propterea, a domino de Warvik juxta relationem ipsorum ipiscopi, inquisitoris et Loyselleur, minæ magnæ illatæ sunt, si ulterius id attentare præsumerent; et de novo duo alii custodes commissi.—Tome ii., p. 298. Frater*

her prison. "She is caught now," the Bishop of Beauvais was heard to say. He was very jocund with the Earl of Warwick. "Farewell," he added, "make good cheer, the thing is done." On the 30th of May, 1431, she was delivered over to the secular arm, and it was resolved that a few hours afterwards she should be led to be burned in the old market-place of Rouen.

We have an account of her last hours from Brother Martin Ladvenu, a Dominican :—

"When he announced to the poor woman the death she was to die that day, and she had learned the hard and cruel death that was near, she commenced to cry piteously, and to tear her hair. 'Alas! do they treat me so horribly and cruelly! Must it be that all my body which was never corrupted shall be to-day consumed and reduced to ashes! Ah, I would rather be beheaded seven times than be thus burned! Alas! if I had been in the prisons of the Church to which I submitted myself, and if I had been guarded by the people of the Church, I should never have come to such a miserable mischance! Oh, I call God, the great Judge, to witness the great wrongs that have been done to me!' And then she complained marvellously of the oppressions done to her in prison by her gaolers and others who had entry to her."

Joan went weeping to the stake. She maintained the reality of her revelations to the end, and was heard to invoke Michael and St. Catherine. Martin Ladvenu heard her confession, followed her to the stake, and sat with her till the fire came near, when she told him to descend and to hold the cross before her till she expired. After it was seen that she was dead, the faggots were pulled apart, and her body, still tied to the stake, was shown to the crowd. The fuel was then again heaped around till her remains were reduced to ashes. It was afterwards told that the executioner was heard to say that her heart would not consume, and that he feared that he was damned, for he had burned a holy woman. An Englishman, who had placed a faggot to the pile, cried out that he repented bitterly, and that he had seen a dove come out of the flames.

Bardinus de Petra ab eadem Johanna audivit, fuit per unum magnæ auctoritatis tentata de violentia; propter quod, ut illa esset agilior ad resistendum, dixit se habitum virilem, qui in carcere fuerat juxta eam caute dimissus, resumpsisse.—Tome ii., p. 305.

It was popularly believed that the holy maid had not really died, and a few years after a woman pretending to be Joan of Arc again come to life, went about Germany and France (from 1436 to 1440), and for a time deceived many, among others, some people of Orleans and two of Joan's brothers. She was married to a knight, Robert des Harmoises. The imposture was detected by the king, Charles VII. She afterwards led an abandoned life, and came to a miserable end.

The cold-hearted councillors of that king, who had done little or nothing to rescue Joan, soon found the want of the powerful arm which had been so useful to their cause, and even tried a substitute. They got hold of a shepherd-lad named William le Bergier or Pastourel, who, as the Chancellor of France wrote, "said neither more nor less than the Maid had done, and who was commanded by God to go with the king's people." In an incursion which the French made into Normandy (August, 1431), the shepherd fell into the hands of the English after a fierce combat, in which the Sire de Saintrilles was also taken. He was brought before the boy-king, Henry VI., tightly tied with cords, and then, it is said, thrown into the Seine. Like St. Francis he showed five blood-marks on the feet, hands, and side. It is worthy of notice that the chroniclers who mention this unfortunate youth, call him insane, which no one said of Joan of Arc.

Twenty-five years after, when the French had regained Normandy, the whole proceedings against the heroine formed the subject of a careful inquiry. Evidence was taken at Domremy, Toul, Vaucouleurs, Poitiers, Orleans, Paris, and Rouen. The old condemnation was formally annulled by the ecclesiastical courts, with the sanction of the Pope, and Joan's memory cleared of the imputation of being a witch, a dreadful one in those days, which blasted all it touched. It is from the record of her trial and rehabilitation that we have gathered so many details.

It seems strange that Joan was never canonised as a saint, as some French writers have proposed. She appeared in a just cause to save a great nation from ruin. Her claims to miraculous aid may well appear credible to those who are willing to admit the supernatural in history, and her fitness to

play the difficult part assumed by her might rather be deemed the proof of the selection of a higher wisdom than her own, than the result of the random excitations of nervous disease. How could God suffer an innocent girl to be deceived by the form of the messengers whom He had sent of old? Nevertheless it would be easy to show that Joan's voices several times deceived her; for example, she said that she was destined to set free the Duke of Orleans from his English captivity, and that she would lead Charles VII. in triumph into Paris. There is reason to believe that she gave out that the fatal sally at Compiègne would succeed. She also said that the voices told her that she would see the king of England, and that she would be delivered from the hands of her enemies. It must be kept in mind that she was no older than twenty when she died, and that her career only lasted about two years, one half of which was spent in prison. Had she lived longer it is likely that the course of events would have indicated more clearly the character of her delusions. Would her hallucinations have ceased to follow her, and her mind have subsided from the state of exultation? Or would she have gone on in her claims of having supernatural communication with Heaven?

Brierre de Boismont has shown that hallucinations are quite compatible with sanity, and even speaks about physiological hallucinations; but though men may have hallucinations without their reason being overset, we hold with Dr. Hagen* that a hallucination is always something pathological. By deranging our sensations, the channel of all our knowledge of the outer world and of our intercourse with other minds, hallucinations must ever place the reason in danger of being overthrown. Joan wrote a letter to the Hussites threatening to give up even the war against the English, to visit these heretics with an avenging arm. It is clear any one making such pretensions at the present time would get her case considered by doctors of medicine instead of doctors of divinity; nor need

* Studien auf dem Gebiete der Aertzlichen Seelenkunde, von Dr. Friedrich Wilhelm Hagen. Erlangen, 1870. "Die Jungfrau von Orleans," p. 107.

it be said what would be their decision. But she lived in credulous times, when no one doubted that men frequently communicated with spirits. The only question was whether they were good or bad spirits. Joan believed they were good spirits, because they never tempted her to evil, and urged her to free her country, which she and those around her believed to be a good work. It was seriously discussed by a learned doctor of Germany whether Joan was really a woman at all, and not a python, who would disappear or turn into a serpent, like the lady in Keats' poem of Lamia. When the whole age was thus deluded, there is little wonder that Joan herself went with the current. The great difficulty, of course, is to give a rational explanation of her early delusions, which seem to be connected with hallucinations of hearing and sight. I cannot say that I have any clear explanation to give, and would not like to prolong this paper beyond the limits of your patience. I shall therefore defer any further statement of my own surmises, thinking it better to have presented to you the facts in the career of Joan of Arc, which it is of importance that you, as psychologists, should know in order to form an opinion.

Since the foregoing pages were read to the Medico-Psychological Association and published in the *Journal of Mental Science*, I have been asked from various quarters to add some commentary, or "epikrise," on this wonderful history; and I have had the benefit of the comments of my friends, some of them men skilful in the lore of hallucinations and mental derangement. A consciousness of my own incapacity to solve so perplexing a question was the reason why I have been slow at attempting it; but since the paper is now republished it is incumbent to make it as complete as may be.

Some see no difficulty in the case. They accept the facts that Joan actually had a mission from heaven. Several romances have been written under this view; and, what is more singular, one of my correspondents, an able psychologist and well-known writer on insanity, wrote to me that he accepted the visions and voices of Joan of Arc as coming directly from Heaven. To this explanation I have only to say, that if I entertained it myself I should feel the same difficulty which the judges had at her

trial. In denying all authority to her revelations, they felt they were in danger of discrediting all the visions and miracles of the Middle Ages, related on no better evidence, of saints beatified and canonised by the Church. Unwilling to attribute her revelations to God, they attributed them to the devil. Either explanation will hardly do for any one but a good Catholic. Without the slightest intention of being irreverent, we see no valid reason why they should not have a Saint Joanna on the calendar, especially as the condemnation at Rouen was solemnly annulled by the Pope; but Protestants who believe that the time of miracles ceased with the apostles, or rationalists who totally reject the supernatural in history, must not try to get out of the difficulty in this way. Historians have generally been content to relate the events more or less correctly with a few commonplaces on the effects of imagination, enthusiasm, or credulity. Of late years especially, many biographies have appeared, generally weak and incorrect, written out of the histories, or from one another, selecting this statement, missing over that one, inventing a third. The subject has tempted the poets; but they only lead us away from the reality, which is finer than their inventions. The scenes in Henry VI. which deal with Joan of Arc are perhaps the only passages of Shakspeare's plays which an Englishman need be ashamed of; and yet it is curious to know that the great dramatist must have thought that under such a character Joan would best be received on the English stage; perhaps he felt it to be the only guise in which her appearance would be tolerated. Indeed, years after Henry VI. was put on the stage, the chroniclers of England went on telling the old coarse falsehoods about the Maid, for which the epic of Southey may perhaps be held to be a tardy expiation. The wittiest of Frenchmen has selected the national heroine as the object of his indecent ridicule. In the "Pucelle," Voltaire has used his invention to raise laughter from the comical situations which a female combatant might place herself in, in camps and battles where men alone appear. Schiller, a man of rare historical insight and fine poetical imagination, has wandered very far from history in the "Jungfrau von Orleans." He makes the heroine fly from the cathedral at Rheims after

crowning the king, and instead of being burnt at the stake, she sinks through wounds received in rescuing the king from the hands of the English.

We know that Joan was deeply distressed by the misery of France. It had lasted long, wellnigh as long as she could remember. None escaped from it. The people of her village had once been compelled to fly for their lives. Every one looked around for some hope of better things. The prophecy that France should be rendered desolate by a woman, and restored by a virgin, was circulated everywhere. One witness, Geoffrey du Fay, who knew Joan and her parents, heard her quote this saying when she was preparing to go to Robert of Vaucouleurs.* Another version was, that the virgin should come from the Marches of Lorraine, and even from a wood in the bois-chenu near Domremy.

Joan pondered over these prophecies. Who was this virgin? Was she living somewhere near? Would that heaven would choose her, though she was but a poor girl! These ideas were quite natural, for she was capable of fulfilling them. High thoughts find their home in heroic breasts. The prophecy acted two ways. It filled her mind with a predisposition to receive certain ideas; and it disposed the people around to sympathise with them and to assist in carrying them out. A simple and earnest mind preoccupied with the hope of supernatural aid will watch for its coming and read a thousand signs in the face of nature.

Those whose minds are full of the thoughts of a spiritual

* "Procès de Réhabilitation," Tome ii., p. 444. John of Novelonpont, who saw Joan at Vaucouleurs, remembered to have heard her say, "It is needful that I should go to the king, if I should wear my feet to the knees. For no one in the world, neither kings nor dukes, nor the daughter of the king of Scotland, nor any other, can recover the kingdom of France; nor is there any succour save with me, although I would prefer to sew beside my poor mother," ii., p. 436. "*Oriunda namque fuit ex confinibus regni Franciæ et ducatus Lotharingiæ, de vico aut villagio quodam dicto Domremy, a parte ipsius regni constituto; in quo non longe a paterna domo ipsius Johannæ, cernitur nemus quoddam quod vetusto nomine Canutum dicitur. De quo vulgaris et antiqua perccebut fama, puellam unam ex eo loco debere nasci, quæ magnalia faceret, prout etiam in processu refertur.*" "Procès de Réhabilitation," Tome iii., p. 339. See also T. iv., p. 323, and T. v., p. 13.

world, which they believe to exist around them, and to be interested in their hopes and struggles, have often interpreted casual events or random words as messages from the unseen. Thoughts suddenly flashing into their own minds have been treated as inspired messages. Some, like John Knox, have imagined they possessed the gift of prophecy from the fulfilment of their forecasts and predictions. Others have interpreted events in a manner very different from what most men would do. As an instance of this, let us take General Harrison, a man of great gallantry and skill, but one of the wildest enthusiasts in the civil wars. He was described by Baxter "as of excellent natural parts for affection and oratory ; of a sanguine complexion ; naturally of such a vivacity, hilarity, and alacrity, as another man hath when he hath drunken a cup too much." Though one of the judges of Charles, at the Restoration he would neither fly nor apply for the amnesty. His behaviour at his trial showed a sublime fearlessness which excited the admiration even of his enemies. He told the sheriff on the day of his execution, that he looked upon this as a clear answer to his prayers. "For many a time," said he, "have I begged of the Lord, that if He had any hard thing, any reproachful work or contemptible service to be done by His people, that I should be employed in it, and now blessed be the name of God who accounteth me worthy to be put upon this service for my Lord Christ."

This exulting faith he preserved to the last. As he was going to execution, one in derision called to him and said : "Where is your good old cause?" He, with a cheerful smile, clapt his hand on his breast, and said, "Here it is, and I am going to seal it with my blood." And when he came to the sight of the gallows, he was transported with joy, and his servant asked him how he did : he answered, "Never better in my life."

Thus, events, which would have shaken the minds of most men in their belief of the goodness of their cause, only heightened the confidence of Harrison. With some minds a predisposition is all powerful. Moreau * tells us of a young Frenchman who had gone to Egypt to fill some employment, when

* "Du Haschisch et de l'Alienation Mentale," par J. Moreau. Paris, 1845, p. 180.

he was possessed with a longing to return to his own country. In order to escape from this harassing desire he used haschish—but in place of diverting his thoughts the drug only caused visions and delusions. He thought he saw the country house where he had lived in his own France; that he saw his mother and sister in the garden, who asked him to rejoin them, and regretted his absence. In the same way, the mind of Joan of Arc was filled with a restless desire for the deliverance of France, and in this state of preoccupation she had a hallucination of hearing and afterwards of sight. The period when these hallucinations first came on is about the time when a natural process might have been expected during which the nervous system is unusually excitable. Dr. Hammond writes,* that one young lady, who was under his care always at these periods had visions of heads and hands floating about in the air near her. They were scarcely ever absent during the whole time. He gives other instances to show that “sometimes the only faculties which are disordered in their action are the perceptions, causing the production of illusions and hallucinations.” It would appear that with the Pucelle hallucinations of hearing were the most frequent, but they were often accompanied by apparitions. The voices were aroused by or accompanied the sounding of bells. Probably the bells echoed the words of her thoughts. One of her youthful companions said † that “while the girls made merry together in the meadows, Joan used to turn aside and speak to God, and he and the others derided her. She was good and simple, and frequented the churches and sacred places. When she was in the fields and heard the church bells, she would bend the knee.” She told the churchwarden of Domremy ‡ that he had been remiss in sounding the bells, and promised to give him some wool if he were more diligent.

* “A Treatise on Insanity,” by William A. Hammond, M.D., &c. London, 1883, p. 109. Baillarger gives the case of a young woman who had hallucinations of the five senses with a condition analogous to Joan’s. They disappeared under fitting remedies. “Des Hallucinations.” Paris, 1846, p. 482.

† “Procès de Réhabilitation,” p. 420; see also p. 424.

‡ *Ibid.* ii., p. 413.

Hallucinations thus excited are not unknown. Under the head of "functional hallucinations of hearing," writes the learned Emminghaus,* "we must designate those phantasms which occasionally appear after the apprehension of real sounds which arouse the attention of the patient. These hallucinations are distinct from the real sounds." Kahlbaum describes some cases of this kind. The patient had the hallucinations so long as the unmeaning sounds lasted; when all was silent, or some one spoke with them, the phantasms ceased.

At her trial she said that the voice and the light came from the right side.† This looks as if the hallucinations were, in the beginning at least, unilateral.

There is less likelihood of the mind being deranged in unilateral hallucinations, as one side of the brain remains unaffected. From her replies to her judges, that Joan had touched St. Margaret and St. Catherine, and that they had a good odour, it would appear that she had also hallucinations of touch and smell.

After all, hallucinations are not so uncommon, and were not less common in the fifteenth century. Michelet has judiciously remarked, ‡—

"The originality of the Maid of Orleans, and what determined her success, was not so much her valour or her visions, as her good sense. Through all her enthusiasm, this daughter of the people saw the question clearly, and was able to solve it.

"She cut the knot which the politic and the men of little faith could not untie. She declared in God's name that Charles VII. was the true heir, and she set him at ease as to his legitimacy, of which he himself had doubts. That legitimacy she sanctified, taking her king straight to Rheims, and gaining over the English, by the celerity of her movements, the decisive advantage of the coronation.

* "Allgemeine Psychopathologie," p. 167.

† "Et prima vice, habuit magnum timorem. Et venit illa vox quasi hora meridiana, tempore æstivo, in horto patris sui; et ipsa Johanna jejunaverat die præcedente. Audivitque vocem a dextro latere versus ecclesiam, et raro eam audit sine claritate. Quæ quidem claritas est ab eodem latere in quo vox auditur, sed ibi communiter est magna claritas. Et quando ipsa Johanna veniebat in Franciam, sæpe audiebat illam vocem. . . . Dixit præterea quod, si ipsa esset in uno nemore, bene audiret voces venientes ad eam."—"Procès de Condemnation," i., p. 52.

‡ "The History of France," vol. ii., p. 515. London, 1846.

"It was not very unusual to see women take up arms. They often fought in sieges,—witness the thirty women wounded at Amiens, and also Jeanne Hachette. In the time of the Maid, and in the same years, the women of Bohemia were fighting against the men, in the wars of the Hussites."

"Neither, I repeat, did the Maid's originality consist in her visions. Who was without such in the Middle Ages?"

Here is one of them, told of a famous woman, Catherine of Siena.* When she was about six years old, returning from an errand with her little brother Stephen, and looking up to the golden clouds of evening, she saw a vision of Jesus, very gloriously apparelled and terrible in majesty and beauty. As she gazed in awe, the Saviour, she said, looked towards her and smiled lovingly upon her, extending His hand in blessing. While she was lost in contemplation of this vision, her little brother continued to descend the hill, imagining that she was following; turning round, he saw his sister far off looking up to heaven; he called to her as loud as he could call, but she made no answer; at length he ran back to her and took her by the hand, saying, "Come on, why are you stopping here?" Catherine appeared to awake from a deep sleep, and bursting into loud weeping she replied, "O Stephen, if you could only see what I see you would never have disturbed me thus!" And her eyes again turned towards heaven, but the vision had vanished.

But to return to our subject, had Joan been a common girl, the hallucinations would have ended in mere talk, or urged her into imprudences which would have caused her ruin, but she had some rare mental and moral qualities. She had a quick perception of the adaptation of means to ends—how things are done in this world. Brother Seguin, a professor of theology, who examined her at Poitiers, said to her, that if God wished to deliver Orleans there was no need to send armed men. She answered, "In the name of God the soldiers will fight and God will give the victory." The theologian rejoined, that God would not desire that they should

* "Catherine of Siena: a Biography," by Josephine E. Butler. London, 1879. Page 24.

advise the king to undertake a dangerous expedition unless she gave some proof of her mission beyond her simple assertion, to which she answered, "In the name of God, I am not come to Poitiers to make signs, but take me to Orleans, and I shall show you the signs for which I am sent."

The statement already mentioned, which Joan made before her judges, about the angels accompanying her from her lodging to the Castle of Chinon, one of them bearing a rich golden crown which was put on the Dauphin's head by the Archbishop of Rheims, is seldom mentioned by historians. The reason, perhaps, is, that it is difficult to tell it in a way which would not detract from the reputation of the heroine. Michelet* only refers to it in a short note. "It seems to follow from her replies, which, indeed, are very obscure, that the crafty court abused her simplicity, and that in order to confirm her belief in her visions, it had a sort of mystery enacted before her, in which an angel appeared carrying the crown." Joan said that there were several angels among them. She distinguished St. Catherine and St. Margaret. The Dauphin, so far from helping, kept amongst the courtiers, and was only recognised by the quickness of Joan. It was their faith, and not hers, which needed strengthening; it was the Dauphin, not Joan, who sought to be confirmed in the nature of her mission; and a trick of this kind would have thrown the whole affair into discredit. It may be said that the whole story was a garbled version of something which she really said; and it would be difficult to deny that her enemies were quite capable of any invention which might tend to blast her credit for veracity. Nevertheless, this is not the kind of invention they were likely to make to serve their purpose. The notes of her statements on this point, at her trial, are full and circumstantial; and what is of importance, no attempt is made at the *procès de réhabilitation* to discredit them, or to prove that this alleged statement was a mere fabrication, or that Joan had been deceived by a pageant got up for the purpose. On the contrary, they tried to show that her words were capable of an allegorical explanation. It must be of course understood that

* "History of France," English Translation, vol. ii., p. 525.

in history we follow probabilities. It seems most probable that this statement was actually made by Joan of Arc. Miss Parr, one of her biographers, who is too ingenuous to pass the matter over, admits that Joan here told an untruth; but if she made this statement knowing it to be untrue, it is clear that she acted very foolishly. Under the circumstances, nothing more rash and senseless could have been said; and as the story leaked out by degrees, first at one examination and then at another, Joan had three days to weigh the matter thoroughly. My own explanation is that it was a delusion. Whether she had any hallucinations at the time when she saw the king does not appear; but in recalling the circumstances of her meeting with the Dauphin at Chinon, she had mixed up her hopes and her dreams and made one of those delusive statements which are significant of a wandering mind. The fact that before her execution she admitted that she had been mistaken, and that she herself was the angel who brought the crown to the king, is not incompatible with her former good faith, for it frequently happens that persons, when the exaltation of their fancy has subsided, admit that they have been subject to a delusion which has ceased to command their faith.

The question whether Joan was sane or insane cannot be answered without some qualification. Those only who believe her visions to be real can hold her mind to have been in a normal condition. We can distinguish in thought the intellect from the senses; but the mind includes the senses, takes its premises from them, and cannot be in a healthy state if they mislead it about the phenomena of the outer world. Thus Joan would come under Hammond's division of perceptual insanity. Leaving the voices and visions out of view, and taking into consideration the views of the age about good and evil spirits, one cannot, save in the instance already noted, produce any fact denoting insanity; and it might be held that with these reservations there is no proof of mental derangement.

There is no dividing line between sanity and insanity. As the eye is not perfectly achromatic, the mind is probably never perfectly sane. Some brains work well, at least, on most occasions; many work tolerably; some work ill; a few

scarcely work at all. The differences are endless; no two beings are exactly alike. There may have been people like you or me, but never the same. Circumstances may be similar, but never identical. History never repeats itself; if it appear to do so, it is because we read it wrong, mistake one feature for the whole. Thus, between the soundest intelligence and the most disordered there are differences our vague adjectives will not define. People mad enough to be shut up in asylums are not so rare—say, one in every five hundred in highly-civilised countries. Then, again, people with a less dangerous or intractable degree of insanity are very common. Every man skilful in the symptoms of lunacy knows this. Some have said that Joan was affected with theomania, with paranoia, or delusional insanity. Perhaps a separate variety would need to be made for her, just as natural orders have had to be made for one or two plants, while other orders include thousands. I do not know any insane person who was like her, but she was not quite sane.

On the world's history men somewhat deranged in mind have had a great influence; but to effect this their delusion must harmonise with the delusions of the multitude. This was the case with the Pucelle. The people were ready to give wonderful attributes to her. Her warnings were heeded as prophecies. Men-at-arms noticed that those to whom she promised life came safe out of battle; others whose life she said would be short were killed. They wanted her to lay her hands on the sick, and to pray for life for the dying or dead. They said that she could bring the birds down from the air to her hand. Her death was followed by a crop of legends, some of which have been already mentioned.

PAPER IV.

THE INSANITY OF POWER.

CHAPTER I.

THE LIMITATIONS OF OUR LIFE—THE DEBASING EFFECTS OF UNCHECKED POWER—THE CLAUDIAN-JULIAN FAMILY : AUGUSTUS, DRUSUS, JULIA, TIBERIUS, CALIGULA, CLAUDIUS, MESSALINA, AGGRIPINA, NERO—THE REIGN OF PHILOSOPHY : MARCUS AURELIUS—COMMODOUS, HELIOGABALUS.

INSANITY is generally described as an acquired quality or modification of a man's character, something unnatural and pathological, whereas it may be easily viewed either as a condition natural in many men, or in others the result of the gradual and inevitable growth of his character. Some children, if not all, are selfish, prone to passion, giving way to anger at the slightest opposition to their wishes, indifferent to the welfare of others, and resenting deprivation and disappointment with an extravagant keenness which rapidly exhausts itself. At a later age they are apt to indulge in cruelty to animals, delight in delusions and false statements, and gloat in pictures of wholesale cruelty and slaughter. If a child were to grow up in such a state of mind it would grow up insane. The education to which children are ceaselessly subjected by their parents and teachers instils certain ideas and replaces others, leads them to control their self-will, and shows them how their own happiness will be injured by bringing their covetousness into collision with the interests of those around them. Hence it may be said that sanity is the result of education, and that those who cannot be educated to control their passions and subdue their appetites to the limits prescribed by society, really grow up insane, have never had sanity implanted upon their nature. In

some cases a man comes into the world with tastes, impulses, and sensibilities which no efforts of education can subdue, and which, in the end, drive him into collision with other men, who put him to death, throw him into prison, or treat him as insane. If such unconformable propensities are shared by a whole tribe, they come into collision with others, destroy, or are destroyed ; the general result being that those who have most power of adapting themselves to circumstances, or adapting circumstances for their ends, remain the rulers of the rest.

From the cradle to the grave man needs the help of his kind ; alone he is weak ; but he can multiply his own strength a thousandfold, by gaining the control of the strength of others. At once the most powerful and the most enslaved of animals, he may hold in his hand a sceptre which rules the fate of millions, or be so utterly cowed by direct subjection to violence, or coerced by the arrangements of wealth and the law of contract, that he has no right to stand upon the earth, or to gain a bite of food, until he has earned these privileges by bearing some of the burdens of those in possession of the world's wealth. Even if he be not the born slave of another man, everywhere he goes some one will drive him away, and say, "This ground is mine." If he wander about, he is imprisoned as a vagrant. If he will not work, he must starve ; if he lift his hand to grasp anything, he is seized as a thief. Thus by rude experience he learns the rule of his narrow lot, or if he rebel he becomes a criminal. If he cannot learn, or will not distinguish, he is treated as insane. Such is the condition of those born among the poor and lowly, nor is it any wonder that all should desire to escape it. Thus the desire of power, the fondness for privilege, the quest for riches, one of the surest means of power, are universal ; but the constant competition of other men checks the full attainment of the aim of all. It so happens that some men have got so pre-eminent a position and gained such a control over other men that their resistance is of no account, and that they show their approval and disapproval of their superiors in a very cautious way ;—or the knowledge of a capricious and tyrannical will on the part of a master may turn the real reluctance into feigned approval. Such despotism is rare ;

for rulers in general have to make a good many sacrifices and compromises to keep the goodwill of their subjects, or avoid the hostility of their neighbours. In fact, power is too eagerly coveted ever to cease to be an object of contention. Nevertheless, by reading the history of the known generations of men, or even by studying the observations of modern travellers, we find a number of despots whose will is all powerful over the tribes or subject nations.

A striking illustration of the ordinary effects of power upon a gross and uncultivated race is to be found in the African chief, as described by modern travellers. In Africa everything is reproduced with great simplicity and in a rude form. Living amongst savages whose notions of morals are rudimentary, regulated by no laws, enjoying the power of life and death, killing his subjects "like hens," surrounded by worthless and corrupt courtiers who spend their time fawning upon him and pandering to his desires, yielding to the caprice of the moment, seizing everything which he covets, gratifying all his lusts, sending to execution the woman whom he has caressed an hour before, subject to fits of fury after his debaucheries, or lying in stupid lethargy, he lords it over his black subjects till his excesses wear out his life, or he dies by the plot of a rival or the hostile spears of some neighbouring tribe. If his name carry terror far and wide, the African king may try to conquer nature or indulge in some ferocious caprice, forbid the young men to marry, have regiments of female warriors, or float a canoe with human blood.

The effect of such a situation upon the character must be interesting to a student of human nature. The man whose every whim is immediately gratified by the ready servility of others is in a position very dangerous to his own mental advancement. By satisfying every desire, his appetite is increased; by continually gratifying his appetite, his will is enfeebled; by never disputing his opinion or correcting his errors, his judgment is deranged. The flatterers fan his most languid caprices into a glow. His selfishness is continually nourished by the eager sacrifices made to his half-formed wishes, and the rights of other men appear of no account.

The first effect of absolute power seems to be a free indul-

gence in sensual pleasures, passing into immoderate lust and debauchery; then a capricious delight of domineering over others, putting them into degrading positions, and making them execute painful tasks, passing into a contempt for their sufferings or a positive pleasure in seeing them suffer. Unrestrained power always tends toward abuse. Indeed, save to some rare and fine natures, the luxury of power consists in its abuse.

Power is nothing if it be conscientiously applied. The man who gives only to the deserving, who punishes only the guilty, who absolves only the innocent, whose testimony is inexorably true, has really no power at all. An imperious sense of duty rules his ways. It is only the limitations of his nature that enable him to exercise his functions with satisfaction. He prefers those whom he knows best, or whom he likes best, or gratifies his tastes as, with unconscious corruption, he absolves the guilty or condemns the innocent. If men were the servants of duty, and really knew their own hearts, power would not be so universally coveted. As it is, few who have attained it are willing to give it up, and the only way to prevent men abusing it is to entrust them with as little as need be. The fear of losing power often makes people careful how they employ it, only this does not always lead them in the right way. As Macchiavel has sagely observed, "Men often attract as much hatred by doing good as by doing evil," and thus a prince who wishes to maintain his power is sometimes constrained not to be good, especially in corrupt times.

The only thing really worth having in a man is his intellect; and this by showing him the limitations of his nature and of his circumstances saves him from the impulse of his passions, and checks the waywardness of his desires and the boundless stretch of his imagination. It is scarcely needful to point out the checks against the abuse of moderate power.

Beyond a man's own conscience around his own heart, over against his own selfishness, are the consciences and hearts of other men. He is so made that he is uneasy at their disapproval, is pained by their remonstrances, fears their displeasure, and writhes under their contempt. Even when he is able to execute what he wants in spite of their opposi-

tion, or to force them to do what they disapprove, his satisfaction is incomplete; hence he wishes not only to overcome their resistance but to alter their will and rule their thoughts, and the slightest sign that he has failed in these objects is enough to arouse his resentment. Thus if the power be very great, these checks to keep a man within the bounds of reason and sobriety are not only overcome, but may be turned to work in a contrary direction. A circle of flatterers may obscure the real opinion of the world, and lead a man along a dangerous path by their suggestions and ready approval of every thing he does.

If it be kept in mind that, besides its own degenerative influence, absolute power is tempted to the indulgence of all the alluring kinds of sensuality without any stint, it will not be surprising that insanity has appeared in all great ruling families. In the earliest historical times we see it in the Babylonian and Persian dynasties, in the Julian family, in that of Charlemagne, in the royal family of Spain, in the imperial house of Russia, and the Sultans of Turkey. There is scarcely an existing dynasty in Europe in which there is not a hereditary neurosis; and insanity and idiocy are very common among the princes of India. But lest we lose ourselves amidst vague generalities, let us consider a few examples selected from ancient and modern history.

THE CLAUDIAN-JULIAN FAMILY—AUGUSTUS.

IN our study of the well-known history of the Cæsars, we are bound to select for consideration those pathological aspects, those symptoms of a neurosis—that is to say, a morbid condition of the nervous system—showing itself in many ways, by insanity, by hallucinations, by hypochondria and hysteria, by odd tastes, strange and immoderate cravings and caprices, by epilepsy or chorea, as well as by deformation of the bones of the skull and face, or of the body, generally or partially. Considerations like these have not been sufficiently attended to either by ancient or by modern historians.

It is not clear whether the neurotic tendency in the Claudian-Julian family commenced with Augustus. The great

Julius towards the close of his life had several epileptiform fits, but this might be the result of his restless and exciting life, his enormous exertions and exposure, and his venereal excesses. His son Cæsareon by Cleopatra was put to death after the fall of Marc Antony. Augustus was no nearer than his grand-nephew. The dictator's younger sister Julia, had a daughter called Atia, who was married to Caius Octavius, the father of Augustus. Neither in appearance, in bodily or in mental qualities, did the second of the Cæsars bear any resemblance to the great founder of the dynasty.

Dr. Jacoby* quotes a passage of Suetonius to prove that Augustus suffered from writers' cramp, which he insists is a disease of cerebral origin, which is doubtful. Though of weakly health, and troubled with various disorders of nutrition, Augustus lived to seventy-six, a great age for a Roman of that period.

DRUSUS.

There are some difficulties in tracing the neurosis from Augustus. Drusus Claudius Nero Germanicus was born three months after the marriage of Augustus with Livia, whose first husband, Tiberius Claudius Nero, was then alive. Augustus had forced him to repudiate his wife in order that he might marry her. The infant Drusus was sent to his presumptive father, Tiberius Claudius, with whom he and his elder brother, afterwards the Emperor Tiberius, remained till his death, which took place three years after, when they returned to their mother Livia. It is said that Augustus had connection with Livia before his marriage with her, but this, even if proved, does not make him the father of Drusus, though it makes it possible. Dr. Jacoby uses many arguments, some of them pretty far-fetched, to prove that Drusus really was the son of Augustus. Of course, unless he can prove this, the hereditary transmission of infirmity in this line cannot be upheld; for if Drusus was no son of Augustus, how could he

* *Études sur la Selection dans ses Rapports, avec l'Herédité chez l'Homme*, par le Dr. Paul Jacoby. Paris, 1884, p. 56. Suetonius, Octavius Augustus, clxxx.

have transmitted the neurosis to Claudius, the son of Drusus by Antonia, the daughter of the triumvir Marc Antony by Octavia? It may be said that the neurosis came from the father of Augustus through his sister Octavia, a theory which, though sustained by no direct proof, is not out of keeping with the genesis of such affections. Insanity and its allied neuroses may appear in separate branches of a family, which it continues to follow for generations. In some instances the only assignable cause is, that the members affected derive their descent from a common ancestor, who himself showed no signs of the disorders which he transmitted to his progeny.*

Jacoby's strongest argument, that Drusus resembled Augustus in appearance, is not quite decisive. If Augustus had shown any desire that Drusus should be regarded as his real instead of his adopted son, we may be sure that Horace† would never have laid so much stress on his descent from the noble race of the Claudii. That Augustus made Tiberius his heir instead of Germanicus, the son of Drusus, forms a strong presumption that the emperor did not believe Drusus to be his own son.

Jacoby takes advantage of the story, that Drusus saw, in a forest of Germany, a barbarian woman of superhuman stature, who forbade him, in Latin, to pursue his conquests any farther, to assume that he had a hallucination of sight and hearing. He was much loved, and gained great distinction for his bravery and conduct in war. He died from a fall from his horse before he was thirty.

* See, for some illustrations of this, the interesting genealogies given by Dr. Ludwig Dahl in his book, "Bidrag til Kundskab om de Sindssyge i Norge (on Insanity in Norway), Christiania, 1859. These were republished in the Appendix of my book on Idiocy and Imbecility. See also the Genealogy of a Neurotic family, *Journal of Mental Science*, Oct. 1881, and Illustrations of Heredity, by James R. Dunlop, M.B., *ib.* April, 1881.

† Carminum iv. 4. In verses from 25 to 40 of this fine ode, Horace clearly takes for granted the descent of Tiberius and Drusus from the Claudii, giving the credit of their education to Augustus. Drusus was then in his twenty-third year.

JULIA.

It was in his daughter Julia by his first wife Scribonia that Augustus saw the first fruits of the degeneration of his family. While coldly satiating his own desires, bringing fear and force to subdue the chastity of free-born virgins, and setting at naught the honour of the wives of Roman citizens, Augustus never contemplated that the ladies of his own house should be otherwise than austere matrons, like his sister Octavia, and his niece Antonia, or the haughty Livia, who bent to him alone; and when made aware of the full measure of the impudent wantonness of his own daughter, he was struck with such horror and indignation as he might have felt had Drusus surrendered his legions to the Vindelici. He at first thought of putting her to death, banished her to an island, where he kept her for five years in strict confinement; never would see her more; and, in his will, forbade her ashes to be placed in his mausoleum.

The remarks of Jacoby about Julia are worthy of attention. Was she a woman of strong passions, as a novelist would say? Strong passions are the principal attraction of the heroes and heroines of some romances, but there are no more superficial observers than romance writers. They have created a fanciful psychology which has nothing in common with real psychology. They present characters like Julia as strong energetic natures, while the most superficial observation, the most elementary analysis, shows the contrary. The Romans were much better psychologists. To passions strong, violent, and irresistible, they give the name of *impotentia*, because they saw not the force but the weakness of the moral personality of the man who does not know how, who is powerless (*impotens*) to resist his passions or his desires.

The daughter of the master of the world, drunk with pride, Julia, the first princess of the Cæsars, ran from one indulgence to another till she lost all power of restraint. The draught that the cold-hearted, cautious usurper could bear without intoxication was too strong for his daughter. Two of her sons whom she bore to Agrippa died when young, her third son Agrippa Posthumus was weak-minded. Thus imbecility

appeared in two branches of the second generation from Augustus. Her daughter Agrippina married Germanicus, thus uniting these two branches.

TIBERIUS.

The reign of the Emperor Tiberius was the first instance of the long-continued abuse of the vast power placed at the disposal of the commander of the legions which had subdued the civilised world. Velleius Paterculus, who knew him intimately before his cruelties had disgusted men, but who is suspected of being a flatterer, praises him warmly, amongst other qualities, for his moderation and affection (*pietas*). Tacitus, who wrote after his name had become hateful, lavishes his matchless skill in analyzing and unfolding character with the stern pleasure of bringing the worst crimes of the dark tyrant into the full light of history. The portrait traced by Suetonius with his usual attention to realistic effect is nearly as sombre. Tacitus allows little for the corrupting effects of a bad time and of unlimited power. Tiberius is described as a man naturally heartless, cruel, and licentious, but with great powers of self-restraint, and so given to dissimulation that he preferred to work underground when it was in his power to carry out his purposes more easily by direct measures. Owing everything to the goodwill of his imperious and politic mother Livia, the wife of Augustus, he was brought up in an uneasy position without any justifiable expectations of gaining the sovereign power. He was generally thought amiable in private life, and under the watchful eye of his stepfather Augustus had won renown in war and proved himself an able administrator and a powerful speaker. Augustus, who complained to Livia of his sour temper, evidently appreciated his abilities. It was probably with an eye to his advancement, or to bind so able a statesman to the Julian dynasty, that he was selected to be the third husband of Julia on the death of Agrippa. To marry this woman, already notorious for her profligacy, Tiberius had to put away his own wife Vipsania, to whom he was much attached. Disgusted with the conduct of Julia, and fearful and jealous of the grandsons of the emperor, Tiberius wrung an unwilling consent

from Augustus to go into exile at Rhodes, where he lived seven years, according to Suetonius, in philosophic retirement, but if we are to trust Tacitus, indulging in secret pleasures and concealed cruelty, and meditating plans of future vengeance. One by one the heirs of Augustus were carried off by an untimely death, Marcellus, the son of Octavia; Caius and Lucius Cæsar, the sons of Agrippa and Julia; and the younger brother of Tiberius, Drusus Claudius Nero, the son of Livia.

The influence of Livia made Augustus prefer Tiberius to Germanicus, the son of Drusus, so that at the age of fifty-six he inherited the imperial power, which he increased by his own dark and subtle policy. The son of Livia by Tiberius Nero, her first husband, he was descended, both on the father's and mother's side, from the old patrician family, of the Claudii, renowned for their talents and their eccentricities, who had done good and evil service to the State.* For the first nine years the reign of Tiberius was a benefit to the Roman world. The corrupting influence of absolute power acted slowly on a man by nature thoughtful and circumspect. According to Tacitus, it was the death of his mother, in the fifteenth year of his reign, that first freed him from any remains of restraint. From this time may be dated a furious, headlong tyranny such as the world had never seen before on so great a scale. A worn-out sensualist, he tried to revive by every device the passions of youth. It has been made a reproach to the historians the faithful realism with which they have chronicled the abominable excesses of the first Cæsars; but, in truth, the study has its interest. Where else can we find such experiments to gauge the limits of the possible depravity of human nature? Where else can we find such far-reaching and irresistible power over the civilised world; such shameless passions, such contempt for the opinion of men, so little fear of retribution beyond the grave? When such men as the first Cæsars were deified, some of them during their lives, religion itself seemed to become the ally of all mastering force that had quite severed itself from pity or

* "Multa multorum Claudiorum egregia merita, multa etiam secus admissa in rempublicam extant."—SÜETONIUS, Tiberius Nero, cap. ii.

from conscience. It would be wasting time to discuss the question whether, in his latter years, Tiberius was insane or only hideously wicked. Insanity sometimes seems the mere exaggeration of wickedness.

“Never let man be bold enough to say,
Thus and no farther let my passions stray;
The first crime past compels us on to more,
And guilt proves fate which was but choice before.”

Tacitus gives some instances of Tiberius' rooted hatred of mankind which certainly look like insanity :*—

“In his solitary island, we are told, he committed petty murders without remorse or ceremony. He had ordered a person, whom he suspected as an accomplice in the destruction of his son Drusus, to attend his presence in the isle of Capreae; and it happened that he had invited, at the same time, a friend from Rhodes, on a visit of pleasure. The friend arrived first, and no sooner set his foot on the shore than he was seized by the guards, and, as a delinquent, hurried away and put to the rack. Tiberius heard of the mistake, but was no otherwise moved than to say, with calm composure, ‘Since you have begun with him, you may finish your work, and put the man out of his pain.’”

Suetonius tells us that the place was still shown at Capreae where he ordered those who were condemned to death after long and exquisite tortures to be thrown into the sea before his eyes. A party of sailors were ready to fall upon them with poles and oars lest any life should be left in them. In spite of the terror he inspired, he could not escape from unwelcome truths. Those condemned to die stung him with reproaches, and libels were scattered amongst the seats in the theatre. Artabanus, the king of the Parthians, sent him a letter upbraiding him with his crimes. Both Tacitus and Suetonius describe him as disgusted with life and suffering from remorse. Tiberius paid little attention to religion, was addicted to astrology, and persuaded that all things were governed by fate. Death he regarded as the end of being, and he gave this as a reason for prolonging the tortures of his victims.

* Murphy's "Tacitus, Annals," Book v. c. 41, vol. ii. p. 307. London, 1811.

CALIGULA.

But a more hideous portent was still to appear, who, from the seat of absolute power, should flaunt in the eyes of the world the follies and atrocities of a deranged mind. There is not a page in the narrative of Suetonius which does not show the insanity of Caligula. The son of Germanicus and Agrippina, the reputed great-grandson of Augustus, both by Drusus and by Julia, he became emperor at the age of twenty-five. He is described as tall of stature, pale, stout of body, with a long neck and thin legs. He increased his naturally repulsive appearance by studying before a mirror the means of making it more frightful. Suetonius* expressly tells us that

“He had neither health of body nor of mind. As a boy, he was troubled with epilepsy, and when he arrived at the years of manhood, though he could endure fatigue, he was sometimes seized with a sudden faintness, so that he could scarcely move, stand, or collect himself. He was himself sensible of the weakness of his mind, and had thoughts of retiring in order to clear his brain. He was believed to have got a philtre from his wife Cæsonia which threw him into a frenzy. He was much disquieted by want of sleep, not resting at night more than three hours, and even then his sleep was broken and troubled by strange images; among other things the ocean seemed to come and speak with him, so during a great part of the night he would sit down at table, or wander through the vast galleries of his house, wishing for the approach of day. To this weakness of mind may be attributed two vices of an opposite character—great confidence and an excessive timidity.”

He was fond of speaking in public, and had a considerable command of words, especially in invective. Once he led the victim to the altar, and raising the mallet with an insane impulse slaughtered the man who bore the sacrificial knife. At another time, lying at a feast beside the two consuls, he burst into a loud laugh. On their blandly asking him what amused him, he answered, “By a single nod I could get either of you strangled.” In the same manner Nero, elated with the

* “Caius Caligula,” cap. xl.

enormities which he had committed, said that no prince before him had known the extent of his power. Such is the natural effect of power upon a weak mind. Like a child with a hatchet who must be chopping everything around, he is not content with holding it, he must exercise it. He seeks to make an occasion for showing his power, and would rather excite resistance than abstain from useless displays. If he be allowed to exercise his power to the fullest extent, he next seeks to go beyond it, and hates the person who checks him.

Enough of the cruelties and extravagances which filled the four years of the reign of Caligula are related in the ordinary histories of Rome.

The next figure was of a weaker type of insanity.

CLAUDIUS.

There never was any doubt of the imbecility of Claudius, the son of Drusus and the brother of Germanicus, whom the legionaries made emperor rather than see the republic restored. His mother, Antonia, said that he had been begun but never finished by nature; and Suetonius has preserved a letter from Augustus to Livia discussing how they could invest their grandson with some dignities without letting him make himself laughed at. The same historian* tells us that he had a tall and good figure, which gave him dignity both when standing and sitting, but especially when at rest. His gait was unsteady through the weakness of his knees. His laugh was uncouth; when angry he grinned and foamed at the mouth. He stuttered, and his head shook when he was doing anything. Such symptoms of nervous disorder not unfrequently attend imbecility.

Claudius was weak, timid, and credulous, but, being put under a severe pedagogue, learned to declaim, made a good Greek scholar, and wrote a history of some length. Though

* Suetonius, Claudius, cxxx. Juvenal mentions his shaking head and dribbling lips:—

“ Ille senis tremulumque caput descendere jussit
In coelum et longa manantia labra saliva.”

Satira vi., l. 622.

diffident in many things, Claudius himself had no idea that he was destitute of judgment; indeed, as may happen with fools, his simplicity was sometimes mixed with shrewdness. He had a passion for hearing causes, and was much inclined to give judgment in favour of the party who appeared, without inquiring why the other was absent. On one occasion he delivered his opinion in writing, "that he was in favour of those who may have spoken the truth." The advocates practised upon his simplicity,—they would call him back and even lay hold of him as he was leaving the tribunal. One disappointed litigant called him an old fool to his face. A man unjustly condemned threw a stylus and some books at him. One day when hearing his causes he caught the smell of a dinner which was preparing in the Temple of Mars. He left the tribunal and joined the feast with the priests. What faculties he had were debased by drunkenness. Through the caprice of the soldiers he was made emperor when fifty. We are told he was naturally cruel. What is more likely, at an early age he acquired a taste for blood in the games of the gladiators, and liked to watch the faces of the dying. At Tibur he took a fancy to see some malefactors put to death in the ancient manner, and waited till night for an executioner who had been called from Rome for the purpose.

Suetonius says that Claudius could be pushed to do anything by acting upon his fears. On one occasion a litigant told the emperor that he had, in a dream, seen him killed by some one. A short time after the opponent in the lawsuit appeared, when the other pretended to recognise him as the assassin, on which the weak emperor ordered him to be dragged to execution. It is said that Messalina and Narcissus used a similar artifice to destroy Appius Silanus. Having arranged their parts, Narcissus rushed before daybreak into the bed-chamber of the emperor to tell him that he had seen in a dream Appius making an attempt on his life. Messalina, feigning to be surprised, said that she had dreamed the same thing for several nights. A short while after it was announced that Appius had made his way in, for they had sent him a message to come the day before, and Claudius, convinced that the dream must be correct, immediately ordered him to be put to death. The

next day Claudius related the occurrence to the senate, and thanked the freedman because he had watched over his safety even in his sleep.

MESSALINA.

The only question was whether Claudius should be governed by his freedmen* or by his wives. As he did not share the depraved tastes of the other Cæsars, the women generally had the victory.

We may here stop to inquire what were the effects of absolute power upon the minds of the two empresses who, one after the other, really exercised the powers nominally given to the weak-minded Claudius. Chastity is the point of honour of a woman as courage is that of a man. It might therefore be thought that the wife of an emperor would be anxious to maintain her power by her fidelity, would seek to satisfy at least in one point the expectations of men, and be fearful of losing the good opinion of her own sex; but Messalina gave herself up to excesses, which, if the description of Juvenal and others be correct, could be hardly outdone by the most sensual men in that corrupt age. The indignation of her stupid husband was only aroused when she openly celebrated her marriage with a paramour. After her tragical death, Claudius, or rather his freedmen, decided that he should marry no more wives; but the post of wife to the emperor was too attractive to female ambition. It was gained by

AGRIPPINA.

This woman, married at thirteen to Domitius Ahenobarbus, became the mother of Nero nine years after. She partook in the orgies of her brother Caligula, and had him on the long list of her paramours. She was accused of poisoning her second husband, Crispus Passienus, and after the death of Messalina used the privileges of a niece to kindle desires in the weak mind of Claudius, whom she married to rule over the world. She promptly got all her rivals in the good graces of Claudius put to death. To be sure that one of them was

* "His, ut dixi, uxoribusque addictus, non principem sed ministrum egit." SUTONIUS, Claudius, c. xxix.

really executed, Agrippina got the head sent to her and opened the mouth with her fingers to make sure that it was the real Lollia by some peculiarity of the teeth. She got herself a recognised rank as Augusta, and sat with Claudius receiving ambassadors. It was before this vile pair, the weak-minded Claudius and his abandoned niece blazing in splendid robes, that the British hero Caractacus was led to atone for his presumption in refusing to share the slavery of the civilised world. Greedy of gold, Agrippina sold places and power, and got rich people put to death to lay hands upon their possessions. She persuaded her simple consort to get her son Nero declared his successor instead of his own son Britannicus, by Messalina. As Claudius showed some signs of contumacy, between them they poisoned the old imbecile, and then put him in the number of the gods. Britannicus, who was epileptic, was afterwards poisoned by Nero.

Though women have not unfrequently been the holders of temporary and precarious power, there are not many instances where they have held a secure and absolute dominion. It may be said that, though the characters of these female sovereigns have been various, they do not seem to have been better able to resist the temptations to irregular amours than those men who preceded and followed them on the throne. Passing over the ancient scandals of the court of Semiramis, the unchastity of Catherine I. after the death of Peter the Great, and of the Tsaritzas, Elizabeth and Catherine II., show that, under the temptations of unchecked power, women are prone to fall into the same excesses as men. Unacquainted with the observations and generalisations of modern psychology, the great Roman historian did not grasp at the hereditary neurosis which followed the Julian family till it ended with

NERO,

who inherited, both from his father* and mother, a descent

* The father of Nero, Cneius Domitius Ahenobarbus, was the grandson of Octavia, the sister of Augustus, through her daughter, the elder Antonia. Agrippina, the mother of Nero, was the daughter of Germanicus, the son of Drusus, by Antonia the younger sister. Agrippina was the sister of Caligula.

corrupted by the subtle taint of insanity and epilepsy, and depraved by sensuality and cruelty, rendered easy by the long enjoyment of power. It was said of Domitius Ahenobarbus, that if he had not been the father of Nero, he would have been the worst man of the age. Suetonius tells that when Domitius was congratulated on the birth of Nero, he said, "Nothing can spring from Agrippina and myself but what is detestable, and an evil to the public."

It is likely that Domitius, clearly a man of an observant and speculative turn of mind, had taken into consideration his own ancestors as well as those of Agrippina. It had been said of his grandfather, Cneius Domitius, that it was no wonder he had a beard the colour of brass, when he had a mouth of iron and a heart of lead. He had probably read the second Philippic of Cicero against Marc Antony, and knew something of the career of Julia. With such a pedigree, Nero might be expected to outdo his father. Nevertheless, the first years of the reign of Nero were said by Trajan to be amongst the best of any emperor. It required four years of absolute power, and the vile servility of panders and flatterers, to overcome the good influence of his tutors, Seneca and Burrhus, and to fan into a blaze that burst of cruelty, caprice, and sensuality, which has gained for his name a notoriety so horrible.

Nero had one daughter by his wife, Poppæa, who died when four months old. She was made a goddess, by a decree of the Senate. Medals have been found with the inscription "Diva Claudia Neronis Filia,"—"The Divine Claudia, the daughter of Nero." Nero was the last of the dynasty of the Cæsars. Only a few side branches of the Augustan family, by the female line, remained. Nero had done his best to help the extinction of the family, for he had put to death nine of the descendants of Augustus. Adding those killed by Tiberius, Caligula, Claudius and his wives, as well as by Sejanus and Chæræa, twenty-four of this race had come to a violent end. Eleven of them were females.

The next ruling family at Rome was the Flavii, which ended with Domitian, a tyrant and sensualist fit to be ranked with Caligula, Nero, and Vitellius.

MARCUS AURELIUS.

The wonderful succession of good emperors who ruled the Roman world for above eighty years might be said to have freed human nature from the reproach that absolute power was a draught too intoxicating for any one to bear. This golden period began with Nerva, and ended with Marcus Aurelius, the best of them all. With him philosophy has reigned; for a moment, thanks to him, the world has been governed by one who was at once the best and the greatest man of his age.* The descent from the father to the son, from Marcus Aurelius to Commodus, was so dreadful that the emperor has not escaped reproach in allowing his paternal fondness to blind him to the faults of the young savage whom he might have disposed in some position better suited to his instincts. It is not to be wondered at that those who witnessed the son of Marcus Aurelius murdering wretched captives in the arena should have recalled the light reputation of his mother, Faustina, and listened to the suggestion that this was the offspring of a gladiator rather than the son of the philosophic emperor. But Renan assures us that all the monuments attest the resemblance of Commodus to Marcus, thus confirming the remark of Fronto, the friend of the emperor, that the twins, Commodus and Antoninus, bore a striking resemblance to their father.

COMMODUS.

Gibbon remarks that of all the Roman emperors Commodus was the first porphyrogenitus, born since his father's succession to the throne. He was carefully educated. We have still the names of the professors of philosophy to whom he was forced to listen like a young lion yawning and showing his formidable teeth.† Apparently the only effect of all their maxims was, that a certain antipathy was established in his mind by which he was led to do the opposite of what they

* Renan "Marc-Aurèle."

† Renan.

had taught. From his first boyhood, says Lampridius,* he was base, cruel, and libidinous, given up to unnatural desires, and corrupting his associates. When twelve years of age, he wished a slave who had overheated the bath to be thrown into the furnace. Xiphilinus,† on the contrary, says that he was not naturally malicious, but simple and easily led away. He accompanied his father in the war with the Quadi and the Marcomanni, and the carnage of the barbarians beyond the Danube no doubt nourished his young taste for blood. If he could not take up the maxims of the Stoics, he learned to use the bow and javelin with surprising skill. Admitted at the age of fifteen to a share in the imperial dignity, he became emperor when nineteen, and leaving the camp returned to Rome. For two or three years he seems to have suffered the counsellors of his father to preserve an appearance of decent government. He himself was quite incapable of exercising the vast concentrated powers of the Roman empire; he disliked even signing his name. Many of his letters contain only the word *Vale*. As he gave himself up more and more to lust and cruelty, the government passed into the hands of the ministers of his pleasures, Perennis or Cleander, on the understanding that he should do what he liked with men's bodies, fortunes, and lives. His favourites sent the vilest creatures to govern the provinces, and sold the lives of men. He kept 300 concubines, and as many boys. His harem was shared by his favourites. He was a glutton and a drunkard. He went to the bath seven or eight times a day, and took food in the bath. So little did he fear the verdict of history, the doom which Tacitus so sternly inflicted on Tiberius, that he caused his most shameful actions to be engrossed in the public records.‡ His exploits in the arena, his shooting of wild beasts, and his slaughter of captives or gladiators, who got little chance of

* "*Historiæ Augustæ*," Biponti, 1787, Commodus Antoninus, chaps. i. and ix.

† "*Collection des Auteurs Latins, avec la Traduction en Français de M. Nisard*." Paris, 1860, vol. i., p. 617.

‡ "*Habuit præterea morem ut omnia quæ turpiter, quæ impure, quæ crudeliter, quæ gladiatorie, quæ lenonice faceret, actis urbis indi juberet.*" —LAMPRIDIUS, xv.

their lives, are too well known to need description. He is said to have fought 735 times in the gladiatorial games. The companions of his orgies often fell a victim to his rage for blood. He is said to have taken a pleasure in bleeding men with a surgeon's lancet. His public acts of power were simply acts of folly. Sometimes he took the title of Hercules; sometimes he delighted to bear the names of celebrated gladiators. He wanted the names of the months to be changed, and that the city of Rome should be called Colonia Commodiana.

Such was the son of Marcus Aurelius. He was simply a man of low intellectual power, of a sanguine temperament and vigorous frame, with strong sensual passions and a wild beast's craving for slaying and blood. His desires were fed to madness by boundless temptation and indulgence.

It is difficult to perceive, even had he been held under the fear of stern punishment, what situation Commodus could have filled in this world. He was scarcely fitted for a slave; but the madness of mankind made him an emperor. It is customary to date the decline of the Roman empire from his reign; but a State which could endure a senseless brute like this as its master for thirteen years was marked for ruin. As usual with these mad tyrants, he perished by the hands of conspirators. As usual the people rejoiced, and the assassins who delivered them were put to death.

HELIOGOBALUS.

A greater degeneration was still to come in the servile submission of the Roman world to a boy of fourteen, who, incapable of ruling, used the vast wealth and power of Rome in gratifying the whims of sensuality.

"It may seem probable," writes Gibbon, "that the vices and follies of Elagabalus have been adorned by fancy, and blackened by prejudice. Yet, confining ourselves to the public scenes displayed before the Roman people, and attested by grave and contemporary historians, their inexpressible infamy surpasses that of any other age or country. The license of an Eastern monarch is secluded from the eye of curiosity by the inaccessible walls of his seraglio. The

sentiments of honour and gallantry have introduced a refinement of pleasure, a regard for decency, and a respect for the public opinion, into the modern Courts of Europe ; but the corrupt and opulent nobles of Rome gratified every vice that could be collected from the mighty conflux of nations and manners. Secure of impunity, careless of censure, they lived without restraint in the patient and humble society of their slaves and parasites. The emperor, in his turn, viewing every rank of his subjects with the same contemptuous indifference, asserted without control his sovereign privilege of lust and luxury."

Heliogabalus had been placed by the legionaries on the imperial throne for no better reason than that he was reputed to be the son of the tyrant Caracalla.

Quite aware of the fate which awaited him, of the violent death which sooner or later ended the orgies of the dissolute emperors of Rome, he yielded to the current of his passions, which bore him to the tomb. Lampridius tells us that he had prepared silver ropes to strangle himself, and golden swords to stab himself, and solutions of poisons, flavoured with spices ; and he had got a high tower erected, the inside of which was adorned with pictures, gold, and gems, from which he might precipitate himself, saying that even his death should be costly.

More time might have been spent in considering the intoxicating effects of despotic power as displayed by the Roman emperors, had not the subject been rendered familiar by some of the greatest historians of ancient and modern times. The next example, though not less striking, is probably little known to ordinary readers.

It may be said of the worst of the Roman emperors that their excesses fell principally upon those around them. Their caprices were like those of overgrown children sure of their way in everything. Indeed, most of them were giddy young men, brought up in the corruptions of power. When he became emperor, Caligula was but twenty-five years of age, Caracalla was twenty-three, Commodus nineteen, Nero seventeen, Heliogabalus fourteen, but Domitian was thirty, and Maximin sixty-two. Under these tyrants the machinery of government was deranged principally by their neglect. The

real administration of affairs, during their short reigns, was in the hands of inferior functionaries, who still retained some of the ruling power of the old Romans.

In the case of Mohammed Toghlaq, Emperor of Delhi, we have a man who insisted in governing, who delighted in the real exercise of power; and whose mental derangement was displayed by his restless desire to try new experiments on the body politic. As the history of his insanity is the history of India during his reign, we shall be obliged to go into some details.

CHAPTER II.

MOHAMMED TOGHLAK, SULTAN OF INDIA.

THE genealogy of Mohammed Toghlak cannot be traced far back. According to Ferishta, his father, Gheias u din Toghlak, was originally a Turki slave, his mother a Jat woman. From a foot-soldier, he had risen to be governor of Debalpur, a town in the Punjab. His son, Mohammed, or Juna as he was then called, was chief of the imperial stables at Delhi while Khusru Khan was sultan. One day Juna rode away with the son of Kichlu Khan, the governor of Multan, to join in a revolt against the sovereign. Khusru Khan was defeated, and fled, and the insurgent chiefs entered the royal palace of Delhi.

Gheias u din Toghlak said to Kichlu Khan, "You must be sultan." "You ought rather to be so," answered the other. They continued disputing for some time, till Kichlu Khan said to Toghlak, "If you refuse to be sultan, your son will become the sovereign." Toghlak, not liking this, seated himself upon the throne. The defeated monarch, Khusru Khan, detected in his hiding-place, was conducted to the new sultan by Juna, and put to death. His head and body were thrown from the terrace, as Khusru Khan had done with the head of his predecessor, and the kingdom belonged in peace to Gheias u din Toghlak, who gained the character of a just and virtuous king. His wife was a virtuous lady, renowned for her works of kindness and charity. Their son Juna, who thus appears to have played an important part from the beginning, was next employed by his father on military expeditions amongst the Hindu rajahs of the Deccan. According to Ibn Batuta, Gheias u din had good reason to suspect his son's fidelity. Wishing perhaps to remain at the head of the army, the sultan set out on an expedition to Bengal, leaving his son

as viceroy in Delhi. Juna bought a large number of slaves, gave magnificent presents, and consulted devotees and astrologers about his future fortunes. On his father's returning with the army, he came out to meet him, and prepared to receive him in a pavilion or great building of wood which he had erected in his honour. Batuta, who took the story from the mouths of eye-witnesses, says that the building was so arranged that it would fall when the elephants passed over a certain spot. At anyrate, the kiosk fell suddenly upon the sultan and his favourite son. Juna ordered them to bring picks and shovels to seek for his father; but he made a sign that they should not be in a hurry, and the tools were only brought after sunset.

They found the sultan lying above the body of his son, and it was even said that he was not yet dead, but had to be despatched. He was buried during the night. Ibn Batuta, who evidently believes this story, says that Khwaja Jehan, the constructor of this building which so opportunely made the throne vacant, enjoyed greater credit with the successor than any one else ever did. At the same time, he was evidently a useful and faithful vizir to Juna, who now (1325) became sultan, under the title of Mohammed Shah Toghlak. On his accession he must have been at least thirty years of age. The fullest description of this monarch is to be found in the travels of Ibn Batuta,* a native of Tangiers, who commenced his wanderings about thirty years after another great medieval traveller, Marco Polo, had returned to Italy. He visited Egypt, Arabia, Syria, Asia Minor, Southern Russia, Bokhara, Constantinople, Persia, Khorassan, and Kabul. He entered India in 1333, and remained in that country about ten years. These were the days of Edward III. and Philip de Valois, when Petrarch and Boccaccio had attained fame, and Chaucer and Froissart were still children.

Ibn Batuta was received with great favour by Mohammed Toghlak, who gave him many rich presents, and repeatedly

* "*Société Asiatique. Voyages de Ibn Batoutah, Texte Arabe, accompagné d'une Traduction par C. Defremery et le Dr. B. R. Sanguinetti.*" Tome Troisième. Paris, 1855. This edition is more complete than the text from which Lee's English translation of Ibn Batuta was made.

paid his debts. He made him judge of Delhi, with a large salary; and as the traveller did not know the language, he allowed him two substitutes. Batuta had many interviews with Toghlak; and as his Travels were written after his return to his native Morocco, he could have had no motives to tell anything but the truth. Though the wonderful character of the events related caused his narrative to be viewed with suspicion, the most incredible parts of his statements are confirmed by Indian historians, who wrote from different sources. The great Oriental traveller has given us a life-like portrait of the Indian monarch.

Toghlak, he tells us, of all men, loved most to make presents and to shed blood. At his gate there is always seen some beggar who becomes rich, or the body of some man put to death. His generosity, his bravery, and his acts of violence and cruelty towards those in fault, have gained him notoriety amongst the people. In spite of all this, he is the most humble of men, and shows the most equity. The ceremonies of religion are observed at his court, and he is very severe in enforcing the regular performance of prayer. He put to death nine people in one day for neglecting the customary prayers. The neighbouring countries, such as Yemen, Khorassan, and Persia, were full of anecdotes about this prince and his profuse generosity to strangers.

Ferishta, the Mahomedan historian of India,* who wrote about 260 years later, says that Toghlak was the most eloquent and accomplished prince of his time; that he wrote some good Persian poetry himself, and was the patron of literary men in general. His letters, both in Arabic and Persian, display so much eloquence, good taste, and good sense that the most able secretaries of later times study them with admiration. Batuta tells us that, though Toghlak understood Arabic tolerably, he could not speak it fluently. It is likely, therefore, that he took advantage of the skill of some Arabian secretary at his court. He was fond of history, and had so

* "History of the Rise of the Mahomedan Power in India till the Year A.D. 1612, translated from the original Persian of Mahomed Kasim Ferishta by John Briggs, M.R.A.S., Lieutenant-Colonel in the Madras Army." London, 1829, pp. 410, 411.

retentive a memory that he recollected almost every event he read of and the time it occurred. He was skilled also in the sciences of physic, logic, astronomy, and mathematics. He had the talent of discovering the character of persons from a very slight acquaintance; and his flashes of suspicion were abrupt and dangerous. He even went so far as to attend himself on patients afflicted with any remarkable disease. He studied the philosophy of the Greek schools, and after his accession to the throne he maintained disputes with Assaud Muntuky, the metaphysician, Oobeid, the poet, and other learned men whose names were once in people's mouths. The presents he gave to these fawning literati almost surpass belief. The story told by Batuta in Morocco, that on a grand entry into Delhi the sultan caused gold and silver money to be thrown from the backs of elephants amongst the people was received with distrust; but a similar statement is to be found both in Khondemir* and Ferishta, taken from a contemporary of Mohammed Toghlak, the historian Ziai din Burny. We are told that the sultan discouraged all intemperate pleasures, and set the example by his own rigid life.† There is nothing to indicate that the sultan was much given to the company of women. From anything we can gather, the reverse seems more likely. But the jealous seclusion of the harem covers much of the private life of an Eastern prince, and Mahomedans consider it bad taste to allude to the females of a family. At his death he only left one son, a child whom his old vizir Khwaja Jehan wished to put on the throne, and whom his nephew treated as suppositious. Batuta mentions beer as being served at the sultan's banquets; but had Toghlak been given to excess in drinking, or had he even been known to drink wine, it would, no doubt, have been recorded to his discredit by the Mussulman historians.

Mohammed Toghlak was thus evidently a character of no common depth and intensity, accomplished, attentive to business, firm, brave and energetic, loving knowledge though bred

* "Voyages d'Ibn Batoutah," Tome iii. Avertissement p. xvii., and note p. 464.

† "The History of Hindostan Translated from the Persian," by Alexander Dow, London, 1812, vol. i., p. 280.

in camps, skilful in war, fond of the society of learned men, studious of history as became a prince, but with a restless curiosity which was attracted by the mysteries of the human mind, and wandered beyond the bounds of the world. Yet the recognition by daily prayer that life is short and God the Judge of all seems to have been of little avail in keeping him from doing wrong.

As Mountstuart Elphinstone has observed,* "The whole of these splendid talents and accomplishments were given to him in vain; they were accompanied by a perversion of judgment which, after every allowance for the intoxication of absolute power, leaves us in doubt whether he was not affected by some degree of insanity. His whole life was spent in pursuing visionary schemes, by means equally irrational, and with a total disregard of the sufferings which they occasioned to his subjects; and its results were more calamitous than those of any other Indian reign." Ferishta tells us that this man, "who established hospitals for the sick, and almshouses for widows and orphans on the most liberal scale," was wholly devoid of mercy. "So little did he hesitate to spill the blood of God's creatures, that when anything occurred which excited him to proceed to that horrid extremity one might have supposed his object was to exterminate the human species altogether. No single week passed without his having put to death one or more of the learned and holy men who surrounded him, or some of the secretaries who attended him." "Every day," writes Ibn Batuta, "they brought to the hall of audience hundreds of people in chains, their arms attached to their neck and their feet tied. Some were killed; others tortured or beaten." The executioners sat at the outer door of the hall of audience and the bodies of the victims lay three days at the gate where they were killed. The sultan's elephants were taught to throw men in the air and catch them with their trunks, to cut their bodies on knives fastened to their tusks, or to trample them under foot. This grim ruler "took no delight in tales or romances, nor did he encourage buffoons or

† "The History of India. The Hindu and Mahometan Periods," by the Hon. Mountstuart Elphinstone, London, 1857, p. 347.

actors." Even his pleasantry was cruel : when he wished to exile his two brothers-in-law, the husbands of his sisters, he wrote on a bit of paper " Banish the foundling, and banish the eater of mice." One of these relatives was of unknown origin ; the other was an Arab of the desert, and the Arabs were said to eat the jerboa, a little rodent classed by popular arrangements among the mice. This vein of ominous pleasantry was, perhaps, hereditary through his father, who, for an Oriental ruler, did not pass for cruel. During his life, the report had been set agoing by his dutiful son that the emperor his father was dead, and, in consequence, the army dissolved and the siege of Warangol was raised. The old emperor, getting some of the spreaders of this story into his power, ordered them to be buried alive, with the pointed remark that, " as they had buried him alive in jest, he would bury them alive in earnest."

The first actions of Mohammed Toghlak seem to have been reasonable and politic enough. He made peace with the general of an invading Mogul force, whom he was not strong enough to drive away, and induced him by an enormous ransom to withdraw into his own country. Mohammed then turned his attention to India, and he subdued the distant provinces, so that his authority was recognised as far as Chittagong and the shores of the Carnatic. In fact the Mussulman empire, during the early part of his reign, was more extensive than it ever was till the days of Aurangzib.

One of the first of his extravagant undertakings was the assembling of a vast army for the conquest of Khorassan, but the troops, finding that proper arrangements had not been made for their subsistence, dispersed, plundering the country wherever they went. Beha u din, the nephew of Gheias u din, was a great warrior; he had been made governor of a province. After the death of his uncle, he refused allegiance to his son Mohammed. Being defeated in the field after a bloody contest, he took refuge with the rajah of Cambila, who refused to give him up. The Hindu prince being blockaded in a fortress, and unable to hold out much longer, told Beha u din to take refuge with another rajah. Then he ordered a great fire to be kindled, and said to his wife and daughters, " I wish to die, and those who would do like me let them do

so." Then the women washed themselves, and rubbing their bodies with perfumes, threw themselves into the flames. The wives of the principal officials and other women did the same. Then the rajah with those who followed his example rushed out upon the Mohammedan army, and fought till they were all killed. The town was taken, and eleven sons of the rajah of Cambila were led away to the sultan, who made them become Mussulmans, and greatly honoured them on account of their birth and the conduct of their father. The other rajah, not having the same resolution, gave up Beha u din, who was conducted to the sultan, his arms bound to his neck. He was taken to his female relations, who abused him and spat on his face. In the end he was flayed alive, and his flesh cooked with rice and sent to his wife and children. His skin was stuffed, and along with the remains of Bahadur Boura, another victim, exhibited through India as a warning to rebels. Disgusted at this barbarity, Kichlu Khan, when these figures were brought to his province, ordered them to be buried. Dreading the resentment of Mohammed Toghlak, Kichlu Khan, who had done so much to place his father on the throne, raised a formidable revolt (1327). Toghlak, who, according to Batuta, showed great courage and conduct, was again successful, killed Kichlu Khan in battle, and hung his head over the gate of Multan. It was with difficulty that he was dissuaded from a general massacre of the people of that great city.

Mohammed Toghlak had heard of the paper notes used for money in China, and thought that he could enrich the imperial treasury by fixing an arbitrary value on copper tokens. The result was that they were only accepted through fear and could not be passed in the remote provinces. Merchants were allowed to coin large quantities through special favour at the mint; for these they obtained goods which they exported to foreign countries, getting gold and silver in exchange. The discontent became so great that the king was obliged to call in the copper currency. The treasury was emptied in exchanging real money for the copper coins at their imaginary value, and the king refused any more payments, so that thousands were ruined. Nobody gained but a few merchants and bankers. Another scheme of the

fanciful despot was dividing the country at Surgdemary on the Ganges into districts of sixty-six miles square under an inspector of husbandry, who should be responsible for the cultivation of the ground. Sums of money were allowed to set the business a-going; but it entirely failed, "and it is likely," adds Ferishta, "if the king had ever returned to Delhi, he would not have spared the life of one of these revenue officers."

In his attempts to shift the capital of India from Delhi to Diogiri, Toghlaq showed at once the whimsical character of his mind and his power to overcome all obstacles to the fulfilment of his wishes. According to Ibn Batuta, he was provoked by anonymous letters which were thrown at night into the Hall of Audience reproaching him with his crimes and follies. Failing to trace the writers of these libels, his wrath fell on the whole population of Delhi. He paid the inhabitants a price for their houses, and ordered them to betake themselves to Diogiri, nearly seven hundred miles off. This place he determined to make the capital of India under the name of Doulatabad. Those who had no money were to be fed by the way at the public expense.

"Criers proclaimed that after three days no one should be found in the city of Delhi. He ordered a careful search to be made for those who should remain hiding. His slaves found in the streets two men, one paralytic and the other blind. They brought them before the sovereign, who ordered the paralytic to be thrown from a catapult, and that the blind man should be dragged from Delhi to Doulatabad, that is to say, forty days' march. He fell to pieces during the journey and only one leg was dragged into Doulatabad. All the inhabitants quitted Delhi. They abandoned their furniture and their goods, and the city remained a desert."

"A trustworthy person," goes on Ibn Batuta, "assured me that the sultan mounted one evening on the terrace of his palace and gazed upon the city of Delhi, where there was neither fire, nor smoke, nor torchlight, and said: 'Now my heart is satisfied and my mind is quiet.' But there was a fire in his brain which would not let him rest. Some time after, he wrote to the inhabitants of different provinces to come to Delhi. "They ruined their country but did not people Delhi, so great is that city. On our entry into the capital we found it empty, abandoned by its population."

Toghlak brought his army again to Delhi and remained there for the space of two years ; but again took it into his head to remove to Doulatabad. He carried off the whole of the inhabitants a second time to the Deckan, leaving the noble metropolis of Delhi a resort for owls and a dwelling-place for the beasts of the desert. The wretched inhabitants, driven to Doulatabad, reduced to poverty in a strange country, without houses and employment, suffered great misery. The country round about, exasperated by his exactions, repeatedly rose against him, and in the end his troops were driven out of the Deckan. At last he lost even the city of Doulatabad, where some of the great works he undertook still attest his vast designs.

A less serious instance of the whimsical character and surpassing egotism of the man is recorded by Ferishta : "On the way to Doulatabad he was afflicted with a violent toothache and lost one of his teeth, which he ordered to be buried with much ceremony at Bhir, and caused a magnificent tomb to be reared over it, which still remains a monument of his vanity and folly."

In the year 1337, he conceived the idea of invading China. It was in vain that his councillors of state assured him that it was impossible to conduct an army across the great mountains which separate Thibet from India. The arbitrary will of the monarch bore down all remonstrance, and a hundred thousand troops, Ferishta says, horsemen, were sent under the command of his sister's son through Nepaul. Some of the troops actually reached the other side of the Himalayas, where they were easily repulsed ; and from the pursuit of the Chinese, the attacks of the mountaineers, the loss by famine, and the rainy season, scarcely a man returned save the soldiers left in garrison in some forts to secure the communication, and these were put to death by the order of the king on their return to Delhi.

Toghlak having set his heart upon being confirmed on his throne by the nominal Caliph, Aboul Abbas of Egypt, sent an ambassador to Cairo ; who returned with an envoy bearing a letter. Toghlak advanced to meet the envoy on foot, put the letter of the Caliph upon his head, ordered great rejoicings to

be made, and struck out from the roll of sultans in the mosques every king's name who had not been confirmed. Amongst the number of these degraded sovereigns was his own father. The envoy was rewarded with lavish gifts, and his horses were shod with gold.

Some time after, Ghiyath u din, a descendant of the Caliph Almostansir, came to India to visit Toghlak. The monarch went to meet him out of Delhi, held the stirrup while his guest mounted on horseback, presented him with betel with his own hand, stood up when he entered, and ordered his courtiers to pay the same respect to the son of the Caliph as to himself. A hundred villages were assigned him for his maintenance, and the most costly gifts showered upon him. Ibn Batuta, who knew this favoured personage, says that he was as miserly as Toghlak was generous. He gives a whimsical instance of the superstitious regard which the sovereign of India showed for the adventurer. Ghiyath u din, becoming jealous of the honours paid to another visitor, the King of Gaznah, sent a message to Toghlak that he might take back all his gifts. On hearing this, writes Batuta, the sovereign got on horseback without losing a moment and went to the son of the Caliph accompanied by ten of his attendants. He caused himself to be announced, dismounted outside the man's house on the public highway, where he was met by the son of the Caliph, who was ready to accept his excuses, but the sultan replied: "In God's name I shall not believe that you are pleased with me till you have put your foot on my neck." Ghiyath u din answered: "If I should die, I would not do such a thing." The sultan answered: "I swear by my head that you must do this." He put his head on the ground, and one of his great officials took with his hand the foot of the son of the Caliph and placed it on the neck of the sovereign, who then rose, saying, "My mind is at rest, for I know that you are pleased with me."

A man of high rank among the Hindus pretended that the sovereign had caused his brother to be put to death without a justifiable motive, and cited him before the judge. The sovereign came on foot without arms to the tribunal. He saluted it, bent before it, and stood before the Khadi. He had previously

warned this functionary that he was not to rise for him, nor stir from his place when he should arrive at the courts. The judge decided that the sovereign was bound to satisfy the opposite party for the blood he had shed, and the sentence was executed. On another occasion a Mussulman pretended that the sultan was owing him some money. The affair was argued in the presence of the judge, who pronounced a verdict against the sovereign that he should pay a sum of money, and he paid it.

A lad belonging to the sons of kings, that is, the great officers of the court, accused the sultan of having struck him without cause, and cited him before the Khadi. He decided that the sovereign was obliged to indemnify the plaintiff by giving him a sum of money, if he were satisfied; if not, that he had a right to direct retaliation. The sultan sent for the lad, and giving him a stick, said: "By my head, you must strike me as I have done to you." The lad took the stick and gave the sultan twenty-one blows with such vigour that I saw his bonnet fall off his head.

The sultan had a brother called Mashoud Khan, whose mother was daughter of a former sultan, Ala u din. "He was," says Batuta, "one of the most beautiful creatures that I ever saw in this world." Suspected by Toghlak of wishing to make an insurrection against him, he confessed through fear of torture. "In fact," adds Ibn Batuta, "every person who denied accusations of that kind that the sultan frames against him is, as a matter of course, put to the torture, and most people preferred death to being tortured." The sultan ordered his brother's head to be cut off in the public square, and the body remained three days abandoned in the same place according to custom. The mother of Mashoud had been stoned two years before for adultery.

On one occasion he ordered two men learned in the law to go to a certain province, with a Turk who should execute their orders. Being suspicious that this man was sent as a spy, they answered: "It would be better that we should go as two witnesses, and we will show him the path of justice that he may follow it." Then the sovereign said: "Assuredly your intention is to devour and waste my goods and to blame that

upon the Turk who has no knowledge." The two lawyers answered: "God keep us from that, O master of the world. We do not seek such a thing." The sultan answered: "You have no other thought;" then he said to his people: "Take them to the Sheikh Zadeh, who is to administer the punishment."

When they were brought to this dreadful functionary he said: "The sultan wishes your death; confess then what he accuses you of and do not cause yourself to be tortured." They answered: "We have never meant anything but what we have said." Zadeh answered, addressing his executioners, "Make them taste something." That means, put them to the torture. They laid them on their backs, and placed on their breasts a plate of red-hot iron, which they took away after great torture, and which exposed or destroyed the flesh. Then they took ashes, which they applied upon the sore. Then the two victims confessed that their intention had been rightly indicated by the sultan, that they were two criminals who deserved death and who had no right to live, nor any complaint to make for their blood in this world or in the next. They wrote that with their own hands and acknowledged their writing before the Khadi. He legalised the statement that their confession had been made voluntarily and without restraint. If they had said, We have been forced to it, they would have been infallibly tormented worse than before. They thought that it was better to have their throats cut without delay than to die in tortments. They were killed. "May God have pity upon them."

Ibn Batuta states that, suspecting several notable people of sympathy with a revolt, he imprisoned some and put to death others. A Khadi, whose eyes had been put out for this assumed offence, was brought before the sultan and told to give the names of the persons in his town who thought and acted like those who had been executed. The Khadi dictated the names of a number of the principal personages of the district. When the monarch saw the list, he said, "This man desires the destruction of the town;" and, addressing himself to his slaves, he said, "Cut off his head," which was instantly done. "May God have pity upon him." Truly, the people were to be

pitied under a despot whose very clemency was cruel, and who could not forgive one without slaughtering another.

An Indian, named Ein-ul-Mulk, Governor of Oude, suddenly revolted, and had nearly caused the destruction of the monarch. Captured in battle, he was brought, riding naked on a bull, to the tent of Toghlak, who spared his life, and even allowed his mother, sister, and wife to live beside him. But the victorious sultan sat on a tower and caused sixty-two of his adherents to be torn to death, or tossed about by the elephants to the sound of trumpets and the beating of drums; pieces of their bodies were thrown at the leader of the rebellion. Ein-ul-Mulk was finally pardoned, and made inspector of the imperial gardens.

Chihab u din was a man renowned for his virtues. He used to fast for a fortnight at a time. He had been in great esteem by the two previous sultans, who used to visit him to ask his benediction. He refused in public audience an employment offered by Mohammed Toghlak, who ordered a celebrated jurisconsult to pull out his beard; on the latter refusing, he ordered the hairs of both their beards to be pulled out, and sent them away to distant employments. Chihab u din, after being seven years in Diogiri, was recalled, accepted some office, and was again held in honour by the sultan. After this, he retired to an uncultivated spot, a few miles from Delhi, where he lived in a grotto, which he had caused to be excavated, and employed himself for above two years in reclaiming and irrigating the waste land around. The monarch, on his return to Delhi, received him with great honour. After a while he sent for him again, but Chihab u din refused to come. Then the sultan sent one of his principal officers, who tried to persuade him to come, and warned him of the danger of refusing. The sheikh answered, "I will never serve a tyrant." On the sultan being informed of this, he, causing Chihab u din to be brought before him, asked, "Do you say that I am a tyrant?" He answered, "Yes, you are a tyrant," mentioning several things he had done, among which was the devastation of the city of Delhi, and the order to leave it given to all the inhabitants. The sultan drew his scimitar, and passed it to Sadr Aldjihan, saying, "Confirm this, that I am a tyrant, and cut my neck with this sword." Chihab u din

replied, "He who would bear witness to that would, no doubt, be killed; but you are yourself conscious of your own crimes." His feet were tied together, and his hands fastened to his neck. He was kept in this condition for fourteen days, without eating or drinking. Every day they brought him to the Hall of Audience, and the lawyers and sheikhs said to him, "Retract your assertion." Chihab u din answered, "I will not retract it;" and desired to be put amongst the band of the martyrs. The fourteenth day the sultan sent food to him, but the sheikh would not eat, and said, "My goods are no longer on this earth. Return to him with your food." The sultan, hearing of this, immediately ordered that they should make the sheikh swallow about two pounds of fecal matter. The sweepers took this dirt, which they dissolved in water, and, throwing him on his back, opened his mouth with pincers, and made him swallow it. Next day, on the sheikh still refusing to withdraw his word, he was beheaded. Thus, in one human breast, the sense of outraged justice and mercy was strong enough to fill the soul with indignation, which would not let him be the servant of a tyrant. Some honour we should pay to the unconquerable sheikh, who dared to speak out the whispers of many and the thoughts of all, in the face of the despot and his crouching courtiers and ready torturers. He ranged himself in the army of the martyrs, nor could all the tortures at the command of the sultan wring from him one word of weakness to soothe the tyrant's maddened pride. He knew that words so spoken could not be idle words. We have sometimes wondered at the terror the base and wicked have for the word which meets their inner thoughts, which puts them in their right class. The word enters their soul, and will not cease to torture them, stirring up thoughts of their debasement, and awakening the sentiment so deeply fixed in a human breast, that a man will be judged by the deeds he has done in the body.

Ibn Batuta, who had the reputation of being a friend of Chihab u din, was in great danger of falling a victim to the wrath of the sultan. It was probably owing to the painful impressions attending his narrow escape, which he attributed to his prayers and penances, that the traveller renounced all his possessions and retired to live in the hermitage of a cele-

brated Mussulman saint, with whom he stayed five months. At the end of this time, Mohammed Toghlak called him to his presence, and sent him on a magnificent embassy to the emperor of China.

While Toghlak remained at Delhi, he led his army out to hunt, as is customary with princes. When he arrived in the district of Beiram, he plainly told his officers that he came not to hunt beasts, but men ; and, without any obvious reason, began to massacre the inhabitants. He had even the barbarity to bring home some thousands of their heads, and to hang them over the city walls. On another occasion he made an excursion towards Canouj, and put to death the inhabitants of that city and the neighbourhood for many miles round, spreading terror and desolation wherever he turned his eyes. Thousands fled to Bengal, where Mullik Fakr u din had revolted (1339), and managed to hold his own against the tyrant.

In order that he might lavish extravagant gifts upon strangers, and maintain an army of Mongols, Turks, Persians, and Afghans, the people were so mercilessly taxed and oppressed by the revenue officers, that in the fertile tract between the Ganges and Jumna the cultivators, weary of their lives, set fire to their houses and retired to the woods with their families and cattle. Many populous towns were abandoned, and remained so for several years. In some instances, the revenue officers, unable to raise the amount demanded, became themselves the leaders of revolts.

When we think on the appalling condition of the people of India, we are tempted to ask, Was it they who were mad, or the tyrant for whom no sword or spear had an edge? As Mountstuart Elphinstone remarks, "There is in general so little scruple about getting rid of a bad king in the East, that it is seldom such extensive mischief is brought about by the misgovernment of one man." We hear of no plots in the palace ; but there were revolts in plenty. Ferishta tells us of fifteen of them, with two invasions from the north-west ; but as has been often observed in India, from the diversity of castes, and the antagonism of rival religions, a united effort of the whole people is difficult or impossible.

The sultan's spies went everywhere. What men said to

their wives at dead of night was reported in the palace. He lived much amongst the strangers whom he had attracted to his court; and gave great offices to obsequious creatures whom he had raised from a mean condition. He was at the head of an army, in great part composed of foreigners, who were as well pleased to ravage India as to live at peace. Revolt brought them plunder and slaves. "Female captives," writes Ibn Batuta, "are scarcely of any value in India, for they are dirty, and ignorant of the proprieties of life in towns. Even those who have been taught are very cheap, and no one needs to buy captives." Batuta had ten sent him from the vizir. "I gave one," writes he, "to the man who brought them; my companion took three of the youngest; as for the rest, I do not know what has become of them."

"The infidels," he goes on, "occupy places adjacent to those belonging to the Mussulmans who have conquered them. These Hindus fortify themselves in the mountains and rough places. They surround themselves with plantations like hedges, which grow extremely thick and close, and cannot be burned. Within these they keep their cattle and their grain, and collect rain water." The country was overrun with robbers. We read of a great pestilence in 1341, well nigh destroying a whole army in the Deckan. Was this an invading epidemic of the Black Death, which so terribly thinned the population of Europe a few years later? We read, too, of droughts and dreadful famines. The sultan, who was grandiose in all his conceptions, caused food to be distributed to the people of Delhi for six months from the great public magazines of corn stored up for many years. His mother, who had become blind, was renowned for her charity, and her son paid great respect to her. Ibn Batuta says that on one occasion when the sultan met his mother on a journey he was seen to go up to her palanquin and kiss her feet. When the traveller returned to Tangiers he was thought to be an impostor as he told of these wonders; but in our own day we have seen the great city of Delhi cleared of all its inhabitants, and thousands of wretches, starving from the famine, fed by the magistrate of a foreign power at the city gates.

Toghlak, who was brave, active, and skilful in war, again and

again scattered his enemies, and ravaged the revolted provinces with merciless cruelty; but the Hindu rajahs of the Deckan recovered their independence, and Bengal became permanently detached from his dynasty,—in fact, all his conquests were wrested from him except Guzerat.

Ferishta tells us that the king said to Ziai u din Burny, the historian, that he understood the people thought these rebellions arose out of his severe punishments, “but,” said he, “they shall never prevent them; crimes must be punished. You are a great historian and learned in the law; in what instances are capital punishments warranted?”

The historian replied, “Seven sorts of criminals deserve severe punishment, but three only entailed death by the law of the Koran,—apostates, shedders of Mussulman blood, and double adulterers.” The king said, “All this may be very true; but mankind has become much worse since these laws were made.” On another occasion Toghlak said that he no sooner put down rebellions in one place than they broke out in another, and asked Burny to suggest some remedy. He replied that when disaffection had once taken root so deeply in the minds of the people, it was not to be exterminated without tearing up the vitals of the State. He had the courage to recommend the monarch to abdicate the throne in favour of his heir. Toghlak answered in an angry tone that he had no one whom he could trust, and that he was determined to scourge his subjects for their rebellion, whatever might be the consequences. A few days after this, having eaten to excess of the savoury fish of the Indus, he died near Tatta in Sind, after a reign of twenty-seven years.

He was succeeded by his nephew, Firuz Toghlak, who had been often associated with him, and had followed him in his campaigns. Firuz gained the character of a just and beneficent king. As a record of the painful memories left by Mohammed Toghlak, Ferishta quotes a decree carved on the Mosque of Firozabad* :—

“It has been usual in former times to spill Mahomedan blood on trivial occasions, and for small crimes to mutilate and torture them

* Brigg's “Ferishta,” vol. i., pp. 462-464.

by cutting off the hands and feet, and noses and ears, by putting out eyes, by pulverising the bones of the living criminal with mallets, by burning the body with fire, by crucifixion, and by nailing the hands and feet, by flaying alive, by the operation of hamstringing, and by cutting human beings to pieces. God in His infinite goodness having been pleased to confer on me the power, has also inspired me with the disposition to put an end to these practices."

In another part of the inscription Firuz says :—

"I have also taken pains to discover the surviving relations of all persons who suffered from the wrath of my late lord and master, Mohammed Toghlak ; and having pensioned and provided for them, have caused them to grant their full pardon and forgiveness to that prince, in the presence of the holy and learned men of this age, whose signatures and seals as witnesses are affixed to the documents ; the whole of which, as far as lay in my power, have been procured and put into a box, and deposited in the vault in which Mohammed Toghlak is entombed."

The analogy of Mohammed Toghlak in private life would be, a man intellectually gifted, accomplished, and full of vigour ; courageous, and skilful in athletic exercises ; rigid in the formalities of religious worship, showing a sense of responsibility to a higher power ; curious for knowledge and fond of the society of learned men, but deficient in judgment ; very fond of power, with an enormous idea of his own importance, but subject to fits of extravagant humility. He would squander money in extravagant gifts, and try to gain more by absurd and chimerical speculations on the most gigantic scale, untaught by his own failures and heedless of the ruin he caused to others. He would be unjust and cruel to those in his power, kindled into murderous frenzy by any contradiction, but capable of forgiving those who offended him after his fury was spent. Such a man would soon dissipate his fortune and indulge in guilty excesses, till he fell into the grasp of the law, or was consigned to a lunatic asylum. Unhappily, he was a powerful prince at the head of a conquering army of mercenaries, surrounded by servile courtiers, who wished to make themselves rich by his profusion, the absolute ruler of a submissive race to whom oppression was nothing new,

the representative of a fanatical religion, proud of its monotheism and purity of worship amongst a nation of polytheists, who had but faint claims to justice and forbearance on earth, and who were destined from their obstinate unbelief to everlasting torments. He presents to mankind the frightful spectacle of a madman on the throne, wielding absolute power to carry out the chimeras of a deranged mind, dragging a whole nation to ruin and misery by his senseless delusions and delirious activity; having a band of executioners ever ready to carry out the tortures of his depraved fancy, and an army willing to commit murder, on a great scale; all the while retaining enough of sense and conduct to remain the master and scourge of India.

Taking up Dr. Ball's "*Leçons sur les Maladies Mentales*," we find, under the head of maniacal excitation, a description of symptoms which recall the derangement of the Indian monarch. Ball accepts the definition of Falret, who describes this form of insanity as a general excitement of all the faculties and disorder of action without any clear derangement of the intelligence. There is a mobility in their ideas which still does not pass into incoherency, and there is a certain degree of logic which rules the situation and hinders the patients from falling into complete absurdity. There exists, at the same time, a moral perturbation which drives the patient to extravagant and sometimes to criminal actions. In such cases there is often an excessive development of certain intellectual faculties, especially of the memory. They are fond of poetry, and full of financial speculations and new projects.

CHAPTER III.

IVAN THE TERRIBLE—THE END OF THE DYNASTY OF RURIK—THE
ROMANOFFS—PAUL OF RUSSIA.

SOME nations are too high-spirited and intelligent to submit to tyranny, and some races will suffer a great deal from a master who lives near them; but the very tendency to obey an immediate superior renders impossible a widespread organisation of despotism. In considering the insanity of power, we may look at it in two ways, the madness of the tyrant in abusing it, and the madness of the people in submitting to it. In the history of Russia* we meet with many striking instances of both. The Russians are rough and cruel to those under them, but inclined to submit to much oppression from those over them. They are at once domineering and servile, brave and submissive. Standing between Asia and Europe, Russia has the organising power of Europe with the yielding nature of Asia. Something of this national character may be inherent in the race. Other traits may be explained by their past history. Under the brutal yoke of the Mongols the Russians learned the utmost extremities of cruelty to which the vanquished must submit. Their country laid waste by the Tartars, and devastated by civil war, the whole people were rendered familiar with misery, bloodshed, and cruelty. Despotism had its root even in the family. The father's children were his slaves, whom he could sell four times. Wives in Russia were under a sterner rule than in Asia. A father was as despotic in his wooden hut as the Tsar in the Kremlin. Prisoners of war became slaves; those ruined by

* The principal authorities used in this chapter are the "Geschichte des Russischen Staates," von Dr. Ernst Herrmann: Hamburg, 1846; the "History of Russia," by Walter K. Kelly: London, 1854; and the "History of Russia," in Lardner's Cyclopædia: London, 1836."

the Tartars or the civil wars could only escape dying of want by selling themselves. The military class were the only possessors of the soil. The towns were scattered over a wide and wasted country; what freedom they possessed was wrested from them by the military chiefs. A strong concentration of power was needed if they should live at all. The people looked to the Tsar as their protector against the Tartars and the nobles. During the fifteenth and sixteenth centuries the Muscovite princes seemed to have been a vigorous and long-lived race. These circumstances allowed such facilities for the abuse of power that it is not surprising that, amongst the Russian Tsars, Ivan IV., generally called Ivan the Terrible, has good claims to be considered the greatest tyrant that ever appeared in history.

His father, Vassili, died in 1553, when Ivan was three years old; and his mother, Helena, became regent. Having rendered herself odious for her irregular conduct and cruelties, she was got rid of by poison at the end of four years. During her rule, Ivan's three uncles had been put to death. The young Tsar fell into the hands of one set of conspirators after another, who committed cruelties, sometimes in his name, and sometimes in their own. He had to suffer many indignities; was sometimes in danger of his life; and saw his favourites killed before his eyes. At the same time he was suffered to indulge all his boyish caprices upon the weak and helpless. Amidst the applause or laughter of his companions the youthful Tsar learned to torment animals to death, to trample under foot the women and children that were in the way of his horses, to roam about at free quarters with his suite, and cause the suppliants who asked his mercy or his justice to be tormented before his eyes.

In spite of an education so vile, he was not beyond the reach of good influences. In 1547, when Ivan was seventeen years old, a fire broke out in the capital, and a large part of the city was reduced to ashes. About two months after, another conflagration, helped by a strong wind, completed the destruction of Moscow. Seventeen hundred people were said to have perished in the flames. The populace, enraged and suspicious, accused the Princess Anna, the Tsar's grandmother,

and two of her sons, of causing the city to be set on fire. They rose and killed one son who had fled into a church for refuge; and, three days after, a crowd came to Vorobievo, where Ivan was, to demand that the Princess Anna and her remaining son should be given up to them. Ivan caused some of the ringleaders to be seized and put to death, others fled. In the midst of these disorders appeared at Vorobievo one of those imposing figures who, like the Hebrew prophets or the dervishes of the East, dared to tell the truth to tyrants. Sylvester, a monk from Novgorod, says a Russian chronicler (Kurbiski), came before the Tsar. "He enjoined him, in the name of an avenging God, to lead a better life, and told him of wonders and Divine visions coming to him. But it is uncertain whether these were really true, or whether they were rather devised on account of the folly of the prince and his childish and thoughtless behaviour. For, as many people tell their servants to terrify the children with the fear of ghosts in order to make them give up the idle amusements of bad companions, so I believe that this priest wanted to heal a great evil by means of harmless threats and useful artifice; and he succeeded. He healed the prince's soul of its leprous wounds." Under the combined influence of Sylvester, Alexis Adashef, a young nobleman of great ability, and Anastasia, the amiable wife of the young sovereign, his evil propensities were kept under, and for thirteen years Russia enjoyed an unusual period of good government and outward prosperity. The army was put in better order; a new code of laws devised; a printing office was established; Archangel was founded, and trade was commenced with England through the White Sea; the frontier was pushed towards the Baltic by successes in Livonia; and by the conquest of Kasan and Astrakhan, the empire was extended to the Caspian. Fortresses were erected to keep the Tartars of the Crimea in check; and the Turks were driven back. In these wars Ivan tasted blood; his tigerish impulses were awakened; he endured with increasing impatience the restraints of moderation and policy with which these two able ministers sought to surround him. In 1552 he found a more pleasing adviser in Vassian, the deposed bishop of Colomna. "How can I rule securely,"

asked Ivan, "and make the great and powerful submissive to me?" "Be cleverer than they," replied the crafty old monk. "Keep no counsellor who is abler than yourself, and you will reign unchecked; to a wiser man you will be as a slave." Ivan kissed the old man's hand, earnestly exclaiming: "My own father could not have given me more wholesome advice."

On the death of the good Anastasia his tyrannical nature broke through all bounds. Sylvester and Adashef found it prudent to leave Moscow.

In a letter which is still preserved * Ivan says :

"This sly hypocrite (Sylvester) who has befooled me with sweet words only thought of worldly power, and made friendship with Adashef to rule the empire without the Tsar, whom they despised. They aroused anew in the boyars the spirit of self-will, and shared cities and provinces amongst their followers, pushed into the imperial council when they wished, and filled all posts with their creatures. I was a slave upon the throne; they dragged the Tsar like a prisoner with a handful of soldiers through the dangerous land of the enemy (Kasan), regarding neither his health nor his life. They devised childish terrors to horrify my soul. They desired that I should be higher than human nature. They forbade me to visit the holy cloisters, and would not allow me to chastise the Germans (to wage war with Livonia). They hated and calumniated the Tsaritzza Anastasia, and favoured in every way the Prince Vladimir Androvitch; and is it now to be wondered at that I am determined to be no more a child in the years of manhood, and to shake off the yoke which a cunning priest and an ungrateful servant have laid on the empire?"

Adashef and Sylvester were soon accused of compassing the death of Anastasia, and when they asked to be allowed to come before the Tsar to clear themselves, the flatterers, by whom Ivan was now surrounded, said to him: "If you allow these wicked sorcerers to come before your eyes, they will enchant you, the great, famous, wise, and God-crowned Tsar, and prescribe to you how much to eat and drink, and how you should live with the Tsaritzza. They will allow you your will as little in great as in small matters; and if you suffer

* Herrmann, vol. iii., p. 172.

them to come before you they will again strike you with blindness. Have you not come to the true use of your understanding only since you chased them away?" Adashef was thrown into prison, where he soon died; and Sylvester banished to a desert island in the White Sea.

In his unwearied desire to humble the boyars, the autocrat followed the policy of his father and his grandfather, Ivan the Great. In the dead of winter, 1565, the Tsar retired to a village near Moscow, whence he sent a letter complaining bitterly of the disorders during his minority, and assuring the citizens, merchants, and people of his good intentions to them. He ended by saying that, as so much opposition was offered to him, he would leave the empire in great sorrow, going the way that God would show.

This crafty letter, which was read to the people by the Metropolitan of Moscow, had the effect desired. Anarchy seemed to all worse than despotism. "The Tsar has left us," cried the people, "we shall perish! Who will be our defence in war with the stranger? How can the sheep do without the shepherd?" The Metropolitan was sent to implore him to return. No one wished the guilty to escape. In a month Ivan consented to come back. Every one was astonished at the change in his appearance. When he left he was tall and stout, with a comely countenance, a fine complexion, sharp grey eyes, a full red beard, broad shoulders, and a wide chest. Now he had lost his hair and beard, his eyes were dull, and his body wasted. Most likely he had suffered from a disease which had been brought to Europe by the companions of Columbus. But now he could have his cherished revenge against the boyars, who had so long restrained and thwarted him. He raised a bodyguard of six thousand men, called the Opritschnina, who carried at their saddle-bows a dog's head and besom, to signify that they were ready to worry to death and sweep away the enemies of the Tsar. With bands of these ruffians he rode through his own dominions, chasing the boyars from their estates in thousands. Many of their wives and families perished in the snow, every one being afraid to help them. Many who could bring two or three hundred horsemen and pay thousands of roubles, were seen begging

from door to door; and others who had been their servants were put in possession of their land, so that men who had been accustomed to hold the plough now appeared with fifty or a hundred horsemen riding behind them; but as these upstarts had no money to begin with, they took from the poor peasants, who were given up to them, as much in one year as they had formerly paid in ten. Informers were employed everywhere. Fear was in every heart. Ivan shut himself up in his palace of Alexandrova, which was surrounded with a wall and ditches. Only eight days after the death of Anastasia, he married a second wife, the daughter of a Circassian, who was rough, and had a bad influence on the Tsar. During his life he married seven wives in succession.

It was the custom in Russia to collect all the most beautiful young women in the provinces, and allow the Tsar to choose his consort from among them. This custom lasted until the days of Peter the Great. In the times of the Romanofs the fair candidates were honourably treated, but with Ivan every successive marriage was the occasion of fresh oppression and insult to his subjects, or slaves, as they called themselves.

In 1570 Ivan caused to be brought to Alexandrova two thousand young women, collected from all parts of Russia. He kept them nearly a year in his dishonourable custody.* After a time the autocrat reduced the number of expectants to twenty-four, then to twelve. Out of these he chose a consort for himself and one for his son. Some of the women were bestowed on his servants, the rest turned away.

No one was secure from his immoderate and unnatural desires. A volume would scarcely suffice for the record still remaining of his caprices and mad cruelties. These were not anecdotes of the occasional crimes and weaknesses of a long

* Herrmann, Band iii., p. 222. Dieselbe so jme deuchte, zu heirathen nicht gefellig, gebraucht er zu schandtbarer fleischlichen Wollust, gab jr etwas und vorheirathet dieselbig under seine henkersbuben, oder wurde auch gar ledig ausgestossen. Taube u. Kruse, S. 231.

Der Däne Ulefeldt sagt in seinem Reisebericht von J. 1579 von Iwan (p. 19): Habet (ut aiunt) in gynæceo suo 50 virgines ex illustri familia oriundas ex Livonia abductas, quas secum, quo se confert, ducit, iis loco uxoris, tamquam ipse uxoratus non sit, utens; und Oderborn, p. 262: Pellices et concubinas cum filiis subinde permutavit.

life, but examples of the career of an unrestrained madman, who was the absolute master of about twelve millions of unresisting slaves. For twenty-six years Ivan lived in an atmosphere of suspicion, fear, jealousy, and hatred, yielding without any remorse to his homicidal impulses and cruellest fancies, and indulging without stint his worst passions and vilest propensities amongst a coarse and servile race.

Let us take a few illustrations from the copious narrative of Herrmann, who supports his statement by the citation of numerous authorities,—Russian chroniclers, and the reports of envoys and traders from Germany, Poland, England, Denmark, and Italy.

One of his favourite jesters had made some unlucky pleasantry, and the Tsar poured a basin of hot soup over his head. When the poor fool began to howl, and wanted to run away, Ivan stabbed him with a knife, and he fell bathed in his blood. Then they called Dr. Arnolph. "Cure my honest servant for me," said the Tsar; "I have carelessly played with him." "So carelessly," answered Arnolph, "that only God and your Tsarish majesty can raise him again. There is no more breath in him."

Another time, as Ivan sat at table there came a nobleman to him. He bent himself to the earth, and greeted the autocrat with the customary obeisance. The Tsar answered, "May you keep well, my dear voyevode; you are worthy of our grace," and cut off his ear with a knife. Repressing all sign of pain, the poor man thanked the Tsar for his gracious pleasantry, and wished him a prosperous reign.

Theodore, who had been his master of the horse for nineteen years, was accused, some thought at the instigation of the tyrant himself, of wishing to dethrone him. Ivan ordered the old man, in presence of the Court, to be dressed with the royal robes and crown; he placed him upon the throne, and put the sceptre in his hand. Then, taking off his hat, Ivan bowed himself before him, and said: "I wish you health, great Tsar of the Russians. Behold you have got the desired honour. But, as I have the power to raise you to the rank of Tsar, I have also the power to throw you down again." On these words, he ran a knife into the heart of the old man.

Sometimes at his feasts he would push away the dishes, and call the ministers of his cruelty to kill the Lithuanian prisoners. Kurbski relates that one of the captives snatched a lance from the hand of the tyrant, and would have killed him had he not been struck down by the Tsarowitch, who enjoyed the massacre as much as his father. After they had butchered about a hundred men, they returned in triumph singing, Goida, goida, and sat down again to the feast. He got a doctor to prepare a poison which could be graduated to kill a man in half-an-hour, in one hour, or several hours, and killed more than a hundred men in trying this preparation.

In 1569, Ivan sent his cousin Vladimir to command the army which he was collecting in Nijni Novgorod; and the people of Kostroma, wishing to do him honour, went out in procession to meet him. On this being reported to him, the autocrat was so much enraged that he ordered the leaders of this public reception to Moscow, and put them to death. To Vladimir he sent a friendly invitation to come to meet him at Alexandrova. On the general announcing his approach, Ivan caused the village where he was to be surrounded, and sent him word that he should be received not as a brother but as an enemy. He ordered the court cook to prepare a bowl of poison. Vladimir, his wife Eudoxia, and their two grown-up daughters, and two sons who were younger, were then brought before the Tsar, and the bowl of poison handed to them one by one. The ladies-in-waiting and servants of Eudoxia would not ask his mercy, and Ivan caused them to be led naked before the people, and then shot. Vladimir's old mother, who had retired into a convent, was ordered to be drowned.

Ivan used to keep bears, which he now and then let loose upon the people for sport. He forced one man to kill his brother; another to kill his father. "Husbands or children were fastened dead to the places which they had occupied at the domestic table, and their wives or mothers were compelled to sit for days opposite to the dear and lifeless remains."

"Like most insane persons," writes Mr. Kelly, * "this frantic being now and then manifested scintillations of talent,

* Kelly, vol. i. p. 145.

of which he made a parade in sophisms, priding himself on his knowledge, and often reasoning with considerable acuteness."

One of his best generals, Kurbski, hearing while in command at Dorpat, on the Lithuanian frontier, that his life was in danger from the suspicious tyrant, fled to Sigismund, King of Poland (1564). He indulged himself in the needless luxury of sending a letter to Ivan, reproaching him with his ingratitude and cruelty, a grievous commission for the faithful slave who delivered it to the Tsar in Moscow. The Tsar ran his pointed staff into the foot of Kurbski's messenger, which the man suffered without a cry. On the letter being read, Ivan ordered the devoted slave to be tortured, and then wrote a long reply. The passages given by Herrmann are like the composition of an insane person, full of that acuteness which consists in missing the main point, and tripping up an opponent with some trifling quibble. We give a few sentences:—

"I have read and understood your writing. The poison of adders is upon the lips of the traitor. You complain of the persecutions which you have suffered; but you would not have gone over to the enemy if we had not treated you too graciously. You boast of the blood you have poured out in battle; but had it not been for your obstinacy, the whole of Livonia had been subjected to the Russian land. Against your will, wholly driven by force like a slave, you have gained victory. You say you have poured out your blood for us; but we have poured out sweat and tears for your disobedience. What was the country during your rule and our minority? A desert, from the rising to the setting of the sun. But when we had tamed you, we built towns and villages where formerly only wild beasts lived. Woe to the house where the wife rules! Woe to the empire where many rule! The Emperor Augustus was the sovereign of the world. He shared his power with nobody. Till now the rulers of Russia have been unrestrained. They have shown grace to their subjects and punished them with death at their pleasure, and so it will remain. I am no more a child. I need the grace of God, and of the Holy Virgin Mary, and of the Holy Saints; but I do not desire the approval of men. You threaten me with the judgment of Christ in another world. Is the power of God not also in this world? That is a heresy of the Manicheans. You think that God only reigns in heaven, and the devil in hell; but that men rule on

earth. No, no; the kingdom of God is everywhere,—in this life as well as in the next. You surround the throne of the Almighty with those put to death by me. What a new heresy! In the words of the Apostle, no man can see God. You have chosen a better master. Your great king is the slave of slaves. Is it then wonderful that slaves praise him? But I have done. Solomon says, Do not answer a fool;—and that is what you are.”

This badly-quoted and badly-applied proverb comes at the end of a letter which was as long as a book.

Stephen Battori, the successor of Sigismund on the throne of Poland (1576), wrote to Ivan that he was a forger who falsified his treaties, and a monster who tortured his subjects. He challenged the Tsar to meet him in single combat, who would not come. “Where are you, god of the Russians,” said Battori, “as you compel your wretched slaves to call you?”

The end of the long wars on the western frontiers, signalised by horrible cruelties, was that the Poles drove Ivan’s troops out of Livonia, and the Swedes drove them out of Esthonia, thus shutting out Russia from the Baltic. Kurbski still found means to send insulting letters to his old sovereign. Towards the end of his reign, Ivan tried by submission to soften the anger of Battori.

This madman, who had said to the Russians, “I am your god, as God is mine, whose throne, like that of the Omnipotent, is surrounded by winged archangels, and who sends forth armies of three hundred thousand men and two hundred cannon against his enemies,” fled at the approach of Dewlet Girai, the Khan of the Tartars of the Crimea, who burned Moscow to the ground (1571), and massacred or led into captivity the inhabitants. The Tartars returned next year; but through the bravery and skill of Michael Vorotynski, aided by 7000 German mercenaries, they were driven back to the steppes.

During Ivan’s reign, Siberia was added to the Russian dominions by Yermak, an adventurer, who, like the Spanish conquerors of America, took advantage of the natives’ ignorance of fire-arms.

Ivan sometimes tried to soothe his conscience by religious

rites of a whimsical character. Keeping three hundred of his minions in the garb of monks, he himself, as abbot, directed their devotions with his usual extravagance. The bell aroused them at four in the morning; the service lasted till seven, and then recommenced from eight to ten. The Tsar sang, read, and prayed with such zeal that the marks of his striking his forehead upon the ground were often visible. While the rest breakfasted, he read or preached, for he knew the Holy Scriptures very well. Like Toghlak, he had a wonderful memory, so that he knew and repeated the names of the captives from all nations. During these devotions, he went every day to visit the prisoners, and never seemed to enjoy anything more than seeing them tortured. In his bed-chamber he had three old blind men who told him histories and tales till he fell asleep. He avoided Philip, the Metropolitan of Moscow, whose saintly character seemed to have imposed respect even upon the savage nature of the Tsar.

On the 22nd of March, 1568, Ivan entered the cathedral of Moscow, with some of his courtiers and guards. The Metropolitan Philip stood in the church by the altar. Ivan approached him to receive the benediction. The metropolitan gazed silently on the image of the Redeemer. At last the courtiers said, "Holy Father, here is the Tsar; bless him." The same heroic wrath which roused the Indian sheikh, Chihab u din, to say to Mohammed Toghlak, "You are a tyrant," now flashed through the soul of the aged patriarch. "In this shape," he said, "and in such deeds as are being done, I cannot recognise the Tsar. Since the sun has shone in heaven no one has seen or heard of sovereigns with the fear of God so foully laying waste their own states. Tartars, and heathens, and other people have law and right; and everywhere there is mercy save in Russia. Remember that God, who has exalted you in the world, will demand an account for the innocent blood on your hand. These stones under your feet will cry out against you. This must I say by God's command, should I meet my death for doing so." Ivan struck his staff on the ground for rage. "Till now," he replied, "I have been much too good to your people and to my empire; but now, for the first time, you will have some-

thing to complain of." This threat was followed by fresh cruelties, in which the priests suffered. Amongst other excesses, he went with some hundreds of his guards, and carried away the wives of some of the noblest citizens of Moscow, whom they dragged through the country for several weeks, living at free quarters in the houses of the nobility. Then, one night, all the women who were left alive were taken to the doors of their own houses.

Philip said to the Tsar—"Ruler! Great Prince! You think that I fear you or death. I have now lived an honest, severe, and upright life for fifty-three years in the holy place at Solowkoi, until my seventy-ninth year—therefore it is better for me to die as an innocent martyr than to look dumb on fear and violence as metropolitan. Do what you please. Here is the shepherd's staff, here are the white hood and the mantle, the signs of my elevation. But you, bishops, archimandrites, abbots, and all servants of the altar, feed faithfully the flock of Christ, and fear the heavenly Tsar more than the earthly one."

On this occasion Ivan forced the old man to take back his priestly robes; but what bad-hearted man ever forgave those who told him an unwelcome truth?

On Michaelmas-day, Philip was reading service in full canonicals at the altar, when there entered the church a boyar with some guards behind him. He read from a paper that the metropolitan was deposed from all his dignities by some ecclesiastical conclave. The soldiers at once seized the old man, tore off his episcopal robes, and threw on a poor frock, led him out of the church, and putting him on a sledge, hurried him away to a cell. One day he was taken out to be tried. The Tsar was present. Philip was accused of sorcery and other misconduct.

His judges much regretted to have to perform so painful a duty, but however repugnant to their private feelings, they must obey the voice of conscience, so the old metropolitan was condemned to imprisonment for life. One day the door of his cell was opened, and there was placed before his eyes the head of his nephew, with a message from the Tsar: "There is your dear relation. Your sorceries have not been able to save him." The people wept in secret, and reported

that wonders were done in the name of the aged saint. They rejoiced that the Bishop of Novgorod, who had been active in degrading the metropolitan, did not reap his desired-for reward, the succession to Philip's dignity. Living in an atmosphere of suspicion and fear, Ivan welcomed the tales of informers as the confirmation of his own delusions. A man who had been punished in Novgorod for some offence wrote, in the name of the archbishop and the citizens, a letter to the King of Poland, inviting him to come to rescue them. Having managed to conceal this letter behind the image in the church, he went to Ivan revealing the pretended plot. The Tsar sent a messenger with the man, who brought back the letter. No further proofs were desired. Ivan collected 15,000 men, and with his two sons marched upon Novgorod. Passing in his way the monastery where Philip, the deposed metropolitan, was confined, he ordered him to be strangled. After plundering some towns on the road, the vanguard of his disorderly army reached Novgorod on the 2nd January, 1570. The town was surrounded with stakes, and no one allowed to get out. Many of the principal people were put in chains. The stillness of terror reigned. No one knew either the cause or the pretext of this ominous march. All awaited the arrival of the Tsar. His first rage was expended on the archbishop and clergy, who were plundered of their possessions. After this came the turn of the inhabitants. Every day they brought before Ivan and his sons from 500 to 1000 of the people, of all classes, who were slaughtered in various ways,—stabbed, cut down, burnt, tied to sledges by the hands and feet. Whole families of men, women, and children, were thrown into the Volkov at places where the ice was open. Those who sought to escape by swimming were stabbed or hacked to death. These massacres lasted for five weeks, and then came a general pillage. The houses were gutted; the cattle and horses killed. Quantities of skins, flax, and other wares, which could not be carried away, were burned. It is not known how many of the inhabitants were killed. A probable estimate makes it about 27,000. Ivan ended by collecting the survivors, and telling them to pray for him and his Christian army. He added, that from the archbishop and

his foolish counsellors God would demand an account of the blood which had been shed. The remaining inhabitants were left starving, and the Tsar went to plunder other places. A hermit, who had great reputation for holiness, met him on the way, and awakened his fears by threats of future punishment, so that he returned to Moscow, which soon became the scene of fresh executions. But we have only room for the crowning horror of his life.

To use the words of Karamsin, the Russian historian, in his eldest son Ivan, the Tsar had prepared for Russia a second self. The Tsarevitch assisted his father in governing the kingdom, and was the partner of his debaucheries and murders. It is said that the son reproached his father for brutally ill-treating his wife, the Princess Helena. The Tsar rushed upon his son, wounding a courtier who tried to hold him back. He struck his son on the temple with his iron-headed staff. The Prince fell down insensible, and died five days after.

The Tsar remained speechless for days after, refused to see anyone, and would take no food. Then his unavailing regrets broke out into lamentations. They heard him calling his son. He thought he saw the Prince everywhere, and heard his voice. He left the palace of Alexandrova, and went to live in Moscow. He sent large sums of money to the Patriarchs of Constantinople, Antioch, Alexandria, and Jerusalem, to get prayers said for the soul of the prince whom he had killed. Otherwise, for the two years and four months during which he survived his son, there were no traces of a better life.

About this time Ivan sent a special ambassador to Queen Elizabeth, desiring an English wife of noble family, and offering to put away his seventh wife to make room for her. Mary Hastings, the daughter of the Earl of Huntington, was proposed by Elizabeth, and approved of by the Russian envoy; but Lady Hastings took fright, and begged the Queen to spare her from such a fate. A noble maiden brought up in an English home, amongst the people from whom Shakspeare drew his portraits of tender and loving women, such as Imogen, Desdemona, Juliet, Cordelia, Rosalind, to be shipped to Archangel to become the head wife in the seraglio of the tyrant of the coarsest of the barbaric nations!

In 1584, Ivan felt his health failing. They announced the appearance of a comet; he gazed at it long, and said: "This is a sign of my death." He collected about sixty astrologers and magicians, some from Lapland. He kept them all in a house and sent to consult them daily. They said that he would not live longer than twelve days. The wife of Feodor, his son and successor, who came to console him, had to fly from the indecency of the Tsar, whose atrocious nature even the approach of death could not tame. Apparently he intended putting the astrologers to death, as lying prophets, if he survived the twelve days; but ere the last day had passed away while playing at draughts on his bed with his favourite, Beelski, he suddenly sank back and expired. His life lasted fifty-three years; his nominal reign fifty, of which the period of furious tyranny had endured for twenty-six years.

It is actually said that the people bewailed his death. Karamsin, after relating his vices and cruelties, observes: "Such was the Tsar! Such were his subjects! Their patience had no limits, for they regarded the rule of the Tsar as the rule of God, and held all contradiction as a transgression of His law. They perished, but they saved for us (the Russians now living) the power of Russia; for in the depth of the obedience of the people lies the strength of the empire." With the exception of Tiberius, whose excesses were more of a private character, all the tyrannical emperors of Rome came to a violent end; and had Mohammed Toghlak lived a year longer, he would most likely have sunk under the general disaffection of his subjects and the inroads of his revolted tributaries; but Ivan at the end of a long and unmeasured indulgence in vice and cruelty, died the undisputed autocrat of the Russians.

The request which he transmitted to Queen Elizabeth that he might be allowed an asylum in England should he be driven away by a rising of his subjects, may have been founded upon knowledge of real danger, or, what seems more likely, upon the delusions of his endless suspicions and fears.

In the insanity of Caligula, Nero, or Commodus, we see the exaggeration of the vices of the Roman empire; in the

maniacal excitation of Mohammed Toghlaek we see an exaggeration of the cupidity, intolerance, and desolating violence of the Mussulman conquerors of India ; and in the character of Ivan Vassilovitch we see the exaggeration of the most repulsive traits of the Russians of the time,—ferocity, cruelty, coarseness, superstition, and deceitfulness. Less whimsical than the Indian monarch, he was more selfish and more vindictive. Sensuality, not marked in Toghlak, appears in Ivan in the grossest forms, and his delusions of suspicion seem more insane and destructive. The intellect of the Tsar had not the brilliant and comprehensive character of that of the Indian sultan ; but Ivan seems to have been less liable to perversion of judgment, and more capable of conducting a steady policy. Those of his letters which have been published show a delusive sharpness, with marked confusion of thought. Stephen Battori, the king of Poland, replying to his adversary the Tsar, gives a candid and correct piece of criticism : “ The letters which you sent to us,” writes Stephen, are “ very long, full of scurrility and impudence, and quite destitute of order and arrangement. You have written everything in a confused, and unformed manner, from which the perturbation of your mind is easily seen.”

FEODOR.

Ivan was succeeded by Feodor, his eldest surviving son, who was then twenty-three years old. In him the neurosis assumed a weaker type. Feodor was pale and delicate, stunted in his growth, with a tottering gait. In disposition he was easy, credulous, and weak-minded, fond of going to the churches and ringing the bells. The Polish ambassador describes him as sitting on the throne pleased with the sceptre and golden apple of state, like a child enjoying his toys. As he had too little capacity to attend to public affairs, Russia was ruled by Boris Godunof, an able minister, who, content to let the weak Feodor remain as the *roi fainéant*, watched for the succession to the throne. By his wife Irene, Feodor had one daughter, who only lived a few days. The presumptive heir to the tsardom was Demetrius, the son of Ivan's sixth wife. Stories were spread that this child inherited his father's cruel disposi-

tion. It was said that he liked to see sheep slaughtered, that he was pleased at seeing blood flow, that he used to kill hens and geese. On one occasion he got his companions to make a number of snow men, to each of which he gave the name of some well-known boyar, the biggest being Boris Godunof. The child then commenced slashing the figures with a wooden sword, saying, "That is what I shall do with the great lords when I am Tsar." These stories only gained importance as being told of the son of Ivan the Terrible, and as threatening a powerful minister. His mother anxiously watched over the young prince; but one day his governess lost sight of him, and he was found lying dead in the courtyard with a cut in the throat. Though it was given out that he had taken an epileptic fit and fallen upon a knife which he had in his hand, it was generally believed that he had been murdered by the directions of Boris. At his death he was ten years of age. The occurrence of epileptic fits, which was not denied, revealed the hereditary neurosis. Feodor died in 1598, after a nominal reign of fourteen years, the last of the descendants of Ivan the Terrible, and the fifty-second sovereign of the Varangian dynasty of Rurik.

Boris Godunof succeeded in becoming Tsar; but dying in a few years, his son was put to death, and Russia fell into great confusion, till in 1613, a boy, sixteen years old, recommended by the virtues of his father, was seated on the throne.

MICHAEL FEODOROVITCH,

the first Tsar of the House of Romanof. Manners in Russia still remained rough and cruel, and the subjection of the lower orders became more rigidly fixed than before. The Tsar was still possessed of despotic power, which the slavish nature of the people allowed to be frightfully abused. The hereditary neurosis which seems to follow such dynasties was not long in appearing. Alexis, the son of Michael, who was an able ruler, had, by his first wife, Feodor, Ivan, Sophia, and several other daughters. By his second wife he had Peter and Nathalie. Feodor II., who occupied the throne for five years, was weak-minded; Ivan positively imbecile. His gait was unsteady;

he stammered; and could scarcely see. On the death of Feodor, his sister Sophia tried to make Ivan Tsar in order to rule in his name. She was a woman of superior talents, but had to give way to the irresistible force of character of her younger brother, Peter the Great. Thus, of Alexis' children two had genius, and two were weak-minded. In Peter, the neurosis was shown by a tendency to convulsions. He was a singular medley of self-sacrifice and tyranny, humanity and cruelty. In dealing with his revolted soldiers, his ferocious executions reminded men of Ivan the Terrible, whom he professed to admire. Peter the Great had only one legitimate son, Alexis, with whose conduct he was so much displeased that he got him put to death in order to preclude the danger of having him for a successor. Peter was succeeded by his wife, Catherine, who was followed by Peter, the son of the unfortunate Prince Alexis. With Peter II., who died young, the male line of the Romanofs became extinct (1730). He was succeeded by Anna, one of the reputed daughters of Ivan, the elder brother of Peter the Great. Anna adopted the great grandson of Ivan as heir to the throne. This unfortunate prince, sometimes called Ivan VI., was supplanted by Elizabeth, the daughter of Peter the Great, who thus became Tsaritzza. He grew up in confinement, and was put to death during the reign of Catherine II. (1764). His intellect was weak—whether by natural infirmity or by deprivation of all education seems uncertain. Elizabeth was indolent and dissolute, and given to drinking and unchastity. She chose for her successor her nephew, Peter III., grandson of Peter the Great by Anna, wife of the Duke of Holstein. Peter was weak-minded, coarse, and dissolute. He was dethroned, and put to death by his astute wife, Catherine, a German princess of the house of Anhalt-Herbst. The royal princes of Russia seem like people living on the top of a high tower. They have nothing to fear from those below, but they are easily pushed over by those who share with them the dangerous eminence.

The notorious unchastity of Catherine II. rendered it at least doubtful who was the father of her only son, afterwards the Emperor

PAUL.

It was generally thought that Soltikof had good claims to the paternity. This makes it uncertain whether an entirely new family was not introduced by Catherine into the palaces of St. Petersburg. While circumstantial evidence may look against Paul's legitimacy, in character he was not dissimilar to Peter III. Paul was said to be the ugliest man in his empire, not even excepting the Kalmucks.* Catherine disliked and neglected him, and intended to set him aside for his son, Alexander. His mother dying suddenly, Paul found himself the absolute master, at the age of thirty-five, of the great empire of Russia (1796).

While he was grand-duke, Paul lived in his castle, at a place called Paulowski, where he spent his time drilling his regiment, and managing the affairs of the village. He had a passion for drill, costume, and regulations. This is natural to a small mind put in possession of power. Unable to grasp the connection of things on a large scale, a person of narrow intellect seizes upon a few details, makes small changes, petty interferences, and trifling regulations, without considering their effect on the whole. In fact, such a person must either exercise his power in this way, or give it over to some one more competent. Such petty tyranny naturally provokes remonstrance, neglect of orders, or opposition. But advice is wasted on a fool, as it is his nature to mistake the relative importance of things. He argues and frets till the smallest points become great in his eyes. Appearances—the mere outer film of things—are to him all-important, because this is all he sees, as he cannot get below the surface of anything requiring an exertion of thought. To such minds, the exactness and mechanical precision of military drill have a fascination. Not grasping at the reasons and essentials of military obedience, they are pleased with the opportunity command gives them for gratifying their love of power. Such men will

* The best of the anecdotes, which are repeated in the histories about Paul, are taken from the "*Memoires Secretes sur la Russie*," Amsterdam, 1800; see Tome I., pp. 338, 339.

consume the whole time and attention of their soldiers in cleaning their buttons and burnishing their arms and accoutrements, all the while forgetting to teach their soldiers the use of their weapons; so that, though looking very smart and "efficient" on the parade ground, they are easily beaten in real warfare by those who prefer what is essential to what is superfluous.

He would place sentries round about his castle at Paulowski, order them to walk or stand in a particular way, to button or unbutton a little more of their coats, or hold their arms in a given manner, then from a terrace he would watch through a telescope whether they obeyed these orders or not. Sometimes Paul would run a mile to cane a soldier who was neglecting his directions, or to give him a rouble if he stood faithful. Visitors who came to the neighbouring village had to write down whence they came, where they were going, and what they wanted. Many stories are told of his unreasonable love of having everything his own way. On one occasion, going in his coach by a narrow road through a wooded morass, Paul told the driver to turn back. The man drove on, wishing to gain a place where he could turn his vehicle. This enraged Paul, who shouted to him to turn at once. On the equerry representing to him that this could not be done, as the road was too narrow, he abused the equerry also. "You are a pitiful scoundrel, like himself," said he; "let him overturn the carriage, let him break my neck, but let him obey me, and turn the instant I command him." The coachman in the meantime got the coach turned, but Paul made him be beaten on the spot.

Paul came to the throne with a number of regulations ready drawn up in his pocket, which he thought he had nothing to do but to carry into execution. He gave away money, and the estates and serfs of the crown, with reckless profusion, and, to replenish his treasury, increased the taxes, and tried to force the people to accept paper notes. He passed most of his time on the parade ground, standing in the coldest weather with his bald head bare, and surrounded by his old generals, who dared no longer appear in their fur pelisses, but had to be dressed like the Tsar. His mind was

incessantly occupied with petty regulations about costume and appearances, which were enforced even upon civilians. He was continually issuing new dresses and accoutrements for his soldiers, and he was unreasonable and cruel in punishing those who did not attend to the smallest orders. Obedience was not always possible, for his orders were sometimes contradictory. For example, he ordered all the officers who had sent in their resignation to leave St. Petersburg and go to their homes; but as those officers who had their homes in St. Petersburg could not do both, they naturally preferred obeying the second part of the order. They were seized, and turned out of the city in the dead of winter. It soon became evident to those about him that the emperor was deranged, and that no one was safe from his fickle and furious disposition. His lucid or quiet intervals became shorter, and his paroxysms of tyranny and unreason more violent. So his courtiers had to apply the only remedy which could be used in an autocracy like that of Russia. His son Alexander consented to take his place. A number of the principal officials broke into the emperor's bedroom, and, on his refusing to sign a deed of abdication, Paul was at once strangled, after having reigned five years.

ALEXANDER I.

Paul's wife, Mary of Würtemberg, was a beautiful and virtuous princess. She bore him four sons and six daughters. Alexander, the eldest, was unlike his father both in appearance and disposition. He was a handsome man, with a noble countenance, and was kind-hearted and generous, but undecided in character. "There might be discerned in him," says Thiers, "traces of hereditary infirmity. His mind—lively, changeable, and susceptible—was continually impressed with the most contrary ideas. But this remarkable prince was not always led away by such momentary impulses: he united with his extensive and versatile comprehension a profound secretiveness which baffled the closest observation. He was well-meaning and a dissembler at the same time."

It was said of Alexander that he walked to be crowned "preceded by the assassins of his grandfather, followed by

those of his father, and surrounded by his own." In fact, though he died of natural disease, his death seems to have been hastened by the revelation of a wide-spread conspiracy against his life.

Paul's second son, Constantine, resembled his father both in his Tartar appearance and in his eccentricities and passions. He was judged incapable of reigning; and on the death of Alexander without children, he acquiesced in his brother Nicholas becoming Emperor of Russia (1825). Nicholas was a tall, fine-looking man, brave, able, and inflexible in purpose, at the same time ambitious and hard-hearted. The continual marriages of the sovereigns of Russia with German princesses introduced a German race, the old Tartar or Slavonic element gradually disappearing. Whatever else may be said or thought of them, the present royal family of Russia are possessed of much fortitude and bodily vigour.

PAPER V.

THE HISTORY OF THE HEREDITARY NEUROSIS OF THE
ROYAL FAMILY OF SPAIN.

IN inquiries upon the influence of heredity in the causation of insanity we rarely get back beyond the third generation. Few men either know, or care much about their great-grandfathers or great-grandmothers, and fewer are willing to keep in remembrance the existence of an ancestral taint. Nevertheless, in studying these subjects we ought to go back as far as we can, and the few pedigrees which have been traced of the genesis of insanity in families bring out deductions of the highest interest. In studying the fortunes of those ruling houses whose lives are recorded by history, we occasionally trace the rise and extinction of a family through insanity, or we behold the wane and final extinction of the hereditary disease. There is no deficiency in the materials. Mental disease is very common in royal and noble families, and great disasters to nations have sometimes signalised the madness of their rulers.

The insanity of Charles VI. of France gave an opportunity to the warlike encroachments of Henry V. of England. The conqueror of Agincourt compelled the French king to give him his daughter in marriage. The revival of the English claims to the throne brought a long and desolating war upon France. Unhappily, Henry VI. inherited the malady transmitted through his French mother, and England, in her turn, was desolated by the Wars of the Roses as a penalty for a dynastic marriage in which the laws of heredity were set at defiance. The insanity did not follow the French line of kings; but then the legitimacy of Charles VII., the reputed son of Charles VI. by Isabella of Bavaria, was very doubtful.

One of the most interesting studies of the rise and progress of a hereditary neurosis may be found in the history of the first kings of Spain. It arose, as far as we can trace it,* from the marriage of John II. of Castile with Isabella of Portugal (1449), the mother of Queen Isabella of Castile, by whose union with Ferdinand of Aragon (1469) the Spanish monarchy was formed. About 350 years after, the direct line became extinct by the death of the imbecile Charles II. of Spain. From John II. to Charles II. we have eight generations.

We know a great deal about the different personages of this great house, where and how they lived, and with whom they married, what children they had, and what became of them. We know their creeds and opinions, their successes and disappointments, their hopes and their fears. Even their forms and features remain to us; their portraits, painted by the greatest artists of Spain and Flanders, may be seen in the museum of Madrid, and gossiping chroniclers let us know their tempers, feelings, and minutest habits. It is difficult, therefore, to imagine any case where the rise and course of a hereditary disease can be more fully studied or traced farther back.

John II. of Castile, though a man of some accomplishments and fond of literature, was in many things weak and easy to imbecility. He allowed all affairs of state to be managed by his favourites, and lamented on his death-bed that he had not been born a mechanic instead of a king. His long reign, "if reign it may be called, which was more properly one protracted minority" (Prescott), was a most disastrous one for Castile. He took for his second wife Isabella of Portugal. This princess, towards the close of

* Might we carry the neurosis back to Pedro I. of Portugal (1357-1367)? He was so whimsical, inconsistent, and cruel, that it is difficult to say whether he was "the incarnation of a demon" or insane. His son, Fernando, was a deplorably weak prince. Fernando was succeeded by John I., a bastard son of Pedro. John married Philippa, daughter of John of Gaunt, by whom he had, amongst other children, a daughter, Isabella. This princess was wedded to Philip the Good of Burgundy, and became the mother of Charles the Bold.

her life, was insane for many years. She was the mother of Queen Isabella, who, after the untimely death of her brother Alfonso, became heiress of Castile, and by marrying Ferdinand of Aragon, united the two kingdoms.

Neither Ferdinand nor Isabella showed any symptoms of insanity. They both possessed much bodily and mental vigour. Ferdinand was crafty and cold-hearted; Isabella has been generally thought to have been naturally good and amiable; but both joined in the work of suppressing the free constitutions of their country, little dreaming that the great dynasty which they were founding would end in a line of weak-minded princes, born to be tools in the hands of others. Of their four children, Don Juan died young (1497); Mary, Queen of Portugal, died in 1498, and her infant son in 1499, thus leaving the inheritance of her parents open to Juana. The youngest sister, Catherine, married Henry VIII. of England. Juana is generally described by historians as having become insane at the death of her husband, the Archduke Philip, and to have lingered over his dead body in the hope that he would come alive again. She kept all women away from it in the prosecution of her jealousy, for which he had given her too much cause during his life. Henry VII. of England was willing to marry Juana, whether sane or insane, especially as it was understood that her derangement would not prevent her bearing children.* She was put aside from the government of Spain, and confined for nearly fifty years in the Castle of Tordesillas, but her name was associated with that of her son Charles, in all public documents, until her death, which took place a few months before his own voluntary retirement from power.

* De Puebla wrote about this proposed marriage :—"There is no king in the world who would make so good a husband to the Queen of Castile as the King of England, whether she be sane or insane. . . . If the insanity of the queen should prove incurable, it would perhaps not be inconvenient that she should live in England. The English seem little to mind her insanity, especially since he has assured them that her derangement of mind would not prevent her from bearing children."—"Simancas Records of the Reign of Henry VII," *Edinburgh Review*, 117, 1863, p. 404.

Bergenroth,* who spent several years of his life in the study of the Spanish archives at Simancas, has written a special essay to prove that the stories of the madness of the unfortunate lady were invented and kept up by her mother, her father, her husband, and, at a later time, by her son. He maintained that her seclusion and imprisonment were really due to the guilty ambition of her father, Ferdinand, and her son Charles to possess the kingdom which she inherited; for she was the heiress of Castile by the death of her mother, Queen Isabella, and ought to have reigned both over Castile and Aragon on the death of her father. Bergenroth certainly proves that during her imprisonment at Tordesillas reports of her sanity were bruited about, and that when she was set free by the insurrection of the Commons (1520) her intellect was not observed to be disordered in any way, save that she was irregular in the times when she took her meals and went to sleep. It appears, however, that physicians were summoned to consult about her health, and had she been really sane it is difficult to see why she did not join with her deliverers and assume the power which they were so anxious to put into her hands.

Robertson† tells us that long before Juana was secluded she was "affected with deep and sullen melancholy;" and Prescott‡ gives, from a well-informed contemporary witness, an early instance of her mental instability, which took place in the year 1503, about seven months after the birth of her second son, Ferdinand.

"Being very anxious to rejoin her husband in Flanders, she sallied out one evening from the Castle of Medina del Campo, though in deshabelle, without announcing her purpose to any of her attendants. They followed, however, and used every argument and entreaty to prevail on her to return, at least for the night, but without effect, until the Bishop of Burgos, who had charge of her

* "Gustave Bergenroth: a Memorial Sketch," by W. C. Cartwright, M.P. Edinburgh, 1870. See Appendix.

† Robertson's "Charles V." London, 1857, vol. i., p. 173.

‡ "History of the Reign of Ferdinand and Isabella the Catholic of Spain." By William H. Prescott. London, 1867, vol. ii., pp. 271, 272.

household, finding every other means ineffectual, was compelled to close the castle gates in order to prevent her departure.

"The princess, thus thwarted in her purpose, gave way to the most violent indignation. She menaced the attendants with her utmost vengeance for their disobedience, and, taking her station on the barrier, she obstinately refused to re-enter the castle, or even to put on any additional clothing, but remained cold and shivering on the spot till the following morning. The good Bishop, sorely embarrassed by the dilemma to which he found himself reduced, of offending the queen by complying with the mad humour of the princess, or the latter still more by resisting it, despatched an express in all haste to Isabella, acquainting her with the affair, and begging instructions how to proceed.

"The queen, who was staying, as has been said, at Segovia, about forty miles distant, alarmed at the intelligence, sent the king's cousin, the Admiral Henriquez, together with the Archbishop of Toledo, at once to Medina, and prepared to follow as fast as the feeble state of her health would permit. The efforts of these eminent persons, however, were not much more successful than those of the Bishop. All they could obtain from Juana was that she would retire to a miserable kitchen in the neighbourhood during the night, while she persisted in taking her station on the barrier as soon as it was light, and continued there, immovable as a statue, the whole day. In this deplorable state she was found by the queen on her arrival, and it was not without great difficulty that the latter, with all the deference habitually paid her by her daughter, succeeded in persuading her to return to her own apartments in the castle. These were the first unequivocal symptoms of that hereditary taint of insanity which had clouded the latter days of Isabella's mother, and which, with a few brief intervals, was to shed a deeper gloom over the long protracted existence of her unfortunate daughter."

The obscurity of the question* is probably owing to the extreme dislike of the Castilians to pass such an indignity on the royal line as publicly to declare the queen insane. If we are to believe that Juana was the victim of a plot so hideously wicked, the Cardinal Ximenes and her youngest daughter Catherine, who shared her imprisonment, must be classed as accomplices after the fact; nor would it be easy to

* Bergenroth's theory is carefully examined and rejected in an able article in the *Edinburgh Review*, No. 268, April, 1870.

explain why her pretensions were not brought forward after the death of her husband. The supporters of that prince were seriously alarmed at the prospect of Ferdinand again returning to rule over Castile, and had Juana been capable of governing, they would surely not have needed to call in the aid of Philip's father, the Emperor Maximilian.

Much of what Bergenroth advances might be explained by admitting that there were times when Juana's intellect was comparatively lucid; which, indeed, was the general statement. Moreover, he is compelled to acknowledge that towards the close of her life the poor queen passed into a stage of dementia—an admission which obviously weakens his argument.

"She lived," he writes, "five and thirty years in her second imprisonment. No wonder that by degrees her reason gave way. During the latter years of her life she believed that she was possessed by evil spirits, which prevented her from being good, and loving her children, or the rites of the Roman Church. She imagined that she saw a great cat lacerating the souls of her father and of her husband. But these wild fancies were not unfrequently interrupted by periods of calm and sound judgment. Physically she sank down to a deplorable state of almost brutish existence. For weeks and months sometimes she did not leave her bed, which received all the evacuations of her body, and was never cleaned. Two things she disliked until the close of her life. It was painful to her to receive a visit from any one of her family, and she wished not to be disturbed by religious ceremonies."

Her son, the Emperor Charles V., who thus reigned in his mother's stead, was one of the greatest monarchs of Europe. His life may justify the adage that madness and genius are something akin. He was, in his youth, a man of great physical strength and activity, and of extraordinary sagacity, mental power, and versatility of intellect. Almost perpetually engaged in wars and great enterprises, he was tried both by good and bad fortune. In some things he was mean and unscrupulous, was subject to fits of melancholy, and deeply religious. He had bad teeth,* and his lower jaw was longer

* This description of the appearance and bodily condition of the emperor is taken from the work of M. Mignet, "Charles Quint, son abdication, son séjour, et sa mort au monastère de Juste." Paris, 1857.

than the other, so that the two rows of teeth did not well meet, which injured the power of mastication, and made his voice indistinct towards the close of his sentences. He is known to have had several fits of epilepsy. These attacks are said to have ceased after his marriage, but he remained much subject to headaches, which obliged him to cut his long hair in 1529. He was very fond of good eating, drank wine freely, and was much afflicted with gout, which came on when he was thirty years of age. His voluntary retirement at the age of fifty-six, though an extraordinary step, was by no means an unwise one. It was mainly owing to bad health. Charles' father, the Archduke Philip, was the son of Maximilian of Austria and Mary of Burgundy, the daughter of Charles the Bold. Mary of Burgundy died at the age of twenty-three. The assertion of a superficial French historiographer that insanity was rife in the House of Burgundy, has cost me much inquiry. The only sign of derangement discovered was that the mind of Charles the Bold seems to have become unhinged by the ruinous defeats which he suffered from the Swiss, whom he so unjustly attacked.

The Emperor Charles had one brother, Ferdinand, who succeeded him as emperor, and four sisters—Eleanor, who was first Queen of Portugal and then of France; Isabella, who became Queen of Denmark; Mary, Queen of Hungary; and Catherine, Queen of Portugal.

Ferdinand was the founder of the German branch of the House of Austria. His son, Maximilian, married his cousin Mary, daughter of Charles V. In two of their sixteen children the neurotic tendency appeared. Rhodolph II. pushed eccentricity and hypochondria to the verge of insanity. Inattentive to the affairs of state, and much given to scientific pursuits, he was at last deposed by his brother Matthias. Coxe, the historian of the House of Austria, tells us that Maximilian's second son, Ernest, was cold and reserved, and such a prey to morbid melancholy that he was scarcely ever seen to smile. These are the only examples known to me of the hereditary neurosis following the Austrian House, which so often intermarried with the Spanish one. The natural son of the Emperor Charles V., Don John of Austria,

by Barbara Blomberg, died at the age of twenty-nine, after gaining great distinction as a general. By a Flemish lady, Margaret Vangest, Charles had a daughter, Margaret of Austria, who became Regent of the Low Countries. She was a woman of masculine character, and inherited from the emperor his love of power and gouty diathesis. She was married first to Alexander de Medici, and then to Octavio Farnese, by whom she became the mother of the celebrated Alexander of Parma, a man of astonishing but eccentric genius, and undoubtedly the greatest general of his time. But the talents of the emperor did not pass to his legitimate descendants. He married his cousin, Isabella, daughter of Emanuel the Great, King of Portugal, by the Infanta Maria, daughter of Ferdinand and Isabella. He had three sons and two daughters, none of whom were insane. His eldest son, Philip II., a man of weakly frame, and of a gloomy, severe, obstinate, and superstitious character, was four times married. His first wife was also his cousin, Mary, daughter of John, King of Portugal, and of Catherine, the youngest daughter of the unfortunate Queen Juana, who had been actually brought up in the Castle of Tordesillas with her mother. The heir of this splendid but unfortunate pedigree was Don Carlos, whom the genius of Otway and Schiller have done so much to make illustrious for gifts and virtues which he never possessed.

The Emperor Charles, on his way to his retirement in the Monastery of Yuste, saw Don Carlos at Valladolid, when he was eleven years of age. Charles remarked to his sisters, "He seems to me of a very irritable disposition. His manners and dispositions do not please me, and I do not know what he may become through time."* We learn from several observers that he was of a fitful and turbulent character, and of a weak and unequal intelligence. He was five years old before he uttered a word (Gachard). He is described by different ambassadors as of low stature, with one leg shorter and one shoulder lower than the other. He had a slight hump upon his back, his forehead was low, and he had the long protruding chin of his grandfather, the Emperor Charles,

* Mignet, p. 152.

as may be seen from his portrait. He articulated with difficulty, especially the letters l and r. His beard was slight, and he was deficient in virility. He roasted hares and other animals taken in the chase, alive. His tutor, says Sir W. Stirling-Maxwell,*

“Was compelled to acknowledge that he had failed to imbue him with the slightest love of learning, in which he consequently made but little progress; that he not only hated his books, but showed no inclination for cane-playing or the still more necessary accomplishment of fencing; and that he was so careless and awkward on horseback that they were afraid of letting him ride much for fear of accidents. To the emperor, who had loved and practised all manly sports with the ardour and skill of a true Burgundian, it must have been a disappointment to learn that the prowess of Duke Charles and Kaiser Max, which had dwindled woefully in his son Philip, seemed altogether extinct in the next generation.”

At the age of sixteen Don Carlos was sent to reside in the university town of Alcala, where he got a very severe fall on the head. This was followed by erysipelas; the doctors suspected fracture, and trepanned the skull. For some days his life was despaired of; amongst the symptoms were delirium and paralysis of the right leg.

It is not to be wondered at that some historians† attribute his subsequent strange doings to derangement of intellect following this accident, and it is likely enough the injury brought a fresh disorder in an already unhealthy brain, though his youth seemed but the natural continuation of his childhood and boyhood. He made violent and senseless assaults upon ecclesiastics and great noblemen of the Court, and insulted women in the streets in a very indecent manner. Prescott tells us that he ordered a pair of boots to be made larger than usual to hold a pair of small pistols, but his father would not

* “The Cloister Life of the Emperor Charles the Fifth,” by William Stirling, 1853, p. 145.

† See Coxe’s “House of Austria,” vol. i. London, 1847, p. 487. “History of the Reign of Philip II., King of Spain,” by William H. Prescott, London, 1860, vol. ii., pp. 470, 471. A very full biography of this prince will be found in the work of M. Gachard, “Don Carlos et Philippe II.” Bruxelles, 1863.

allow this to be done; and when Carlos found that his orders had not been executed, he beat the poor bootmaker, and, ordering the leather to be cut in pieces and stewed, he forced the man to swallow as much of it as he could get down, on the spot. Another time a money-lender having in the usual grandiloquent vein of the Castilian declared that all he had was at his disposal, Carlos took him at his word, and forced him to pay him 50,000 ducats, which he recklessly squandered.

His father spoke of him as being insane, and treated him as a criminal. He was willing to attribute the prince's excesses against others to madness, but he regarded his threats and disobedience against himself in the light of crimes. Don Carlos was put in very rigid confinement by his merciless father; he repeatedly tried to commit suicide, indulged in great excess in eating, and died in prison when twenty-three years of age.

By his second wife, Mary, Queen of England, his father's cousin, most fortunately for that country, Philip had no children. There is little room for doubt that Mary Tudor was, towards the close of her life, afflicted with hysterical insanity. By his third wife, Elizabeth of France, he had two daughters, who were married into the Houses of Austria and Savoy. His fourth wife was his own niece, the daughter of Maximilian II. by Mary, daughter of Charles V. But the Pope, who could grant a dispensation for such a marriage, could not save his descendants from the consequences. By this lady, Anne of Austria, Philip had three sons and one daughter, who all died young, and one son who succeeded him on the Spanish throne as Philip III. But with Philip II., bigoted tyrant as he was, the whole vigour of the Spanish line passed away. The people had been brought into servile dependence, had no voice in their own government, and now were under kings who could not govern. The power of Spain declined as rapidly as it had risen. Philip III., a man of feeble and indolent character, governed by worthless favourites, was succeeded by Philip IV., whose reign was a period of great misfortune. He was indolent and voluptuous, but of some natural abilities; he had a taste for the fine arts, and is said to have composed a tragedy himself.

He had a son named Prosper, afflicted from his birth with convulsion fits, who died early. A younger son succeeded him under the name of Charles II. Of this unfortunate prince Lord Macaulay has given us the following description :—

“From his birth a blight was on his body and on his mind. With difficulty his almost imperceptible spark of life had been screened and fanned into a dim and flickering flame. His childhood, except when he could be rocked and sung into sickly sleep, was one long piteous wail. Till he was ten years old his days were passed on the laps of women, and he was never once suffered to stand on his rickety legs. None of those tawny little urchins, clad in rags stolen from scarecrows, whom Murillo loved to paint begging or rolling in the sand, owed less to education than this despotic ruler of thirty millions of subjects. The most important events in the history of his own kingdom, the very names of provinces and cities which were among his most valuable possessions were unknown to him. It may well be doubted whether he was aware that Sicily was an island, that Christopher Columbus had discovered America, or that the English were not Mahomedans. In his youth, however, though too imbecile for study or for business, he was not incapable of being amused. He shot, hawked, and hunted. He enjoyed, with the delight of a true Spaniard, two delightful spectacles : a horse with its bowels gored out, and a Jew writhing in the fire. The time came when the mightiest of instincts ordinarily awakens from its repose. It was hoped that the young king would not prove invincible to female attractions, and that he would leave a Prince of Asturias to succeed him. A consort was found for him in the royal family of France, and her beauty and grace gave him a languid pleasure. He liked to adorn her with jewels, to see her dance, and to tell her what sport he had had with his dogs and his falcons. But it was soon whispered that she was a wife only in name. She died, and her place was supplied by a German princess, nearly allied to the Imperial house. But the second marriage, like the first, proved barren ; and long before the king had passed the prime of life, all the politicians of Europe had begun to take it for granted in all their calculations that he would be the last descendant in the male line of Charles the Fifth. Meanwhile, a sullen and abject melancholy took possession of his soul. The diversions which had been the serious employment of his youth, became distasteful to him. He ceased to find pleasure in his nets and boar spears, in the fandango and the

bull-fight. Sometimes he shut himself up in an inner chamber from the eyes of his courtiers. Sometimes he loitered alone, from sunrise to sunset, in the dreary and rugged wilderness which surrounds the Escorial. The hours which he did not waste in listless indolence were divided between childish sports and childish devotions. He delighted in rare animals, and still more in dwarfs. When neither strange beasts nor little men could dispel the black thoughts which gathered in his mind, he repeated aves and credos; he walked in processions; sometimes he starved himself; sometimes he whipped himself. At length a complication of maladies completed the ruin of all his faculties. His stomach failed; nor was this strange, for in him the malformation of the jaw, characteristic of his family, was so serious that he could not masticate his food; and he was in the habit of swallowing ollas and sweetmeats in the state in which they were set before him." He was epileptic, and had lost his hair and eyebrows at the age of thirty-five.

This monarch, who died in 1700, left behind him a will bequeathing all the millions who were under his rule to the grandson of Louis XIV. of France. The dissatisfaction of rival claimants led to the celebrated War of the Succession, at the end of which, after a great destruction of human life, the Bourbon prince remained in possession, under the title of Philip V.*

In this sketch we have traced a hereditary neurosis following a family for 350 years—sometimes passing over a generation and appearing in various forms and intensities as epilepsy, hypochondria, melancholia, mania, and imbecility, till at length it extinguished the direct royal line of Spain. The baneful tendency in the blood was reinforced by close intermarriages with families of the same stock; and it is worthy of notice that the House of Austria, with which the Spanish line was so often connected by marriage, had few members

* It is not certain whether the neurosis ended with the Spanish House of Kings. Philip V. was the son of Louis the Dauphin, whose mother was Maria Theresa, daughter of Philip IV. of Spain, and wife of Louis XIV. She was extremely stupid. Philip resigned the crown of Spain twice through weakness and indolence. His son and successor, Ferdinand VI., became insane. His brother, by another mother, Charles III., was a very able prince; but he had a son who was imbecile and declared incapable of reigning.

insane, and in the end threw off the hereditary curse. What vigour was in the first Spanish kings appeared in their illegitimate descendants, and those born in wedlock only inherited their diseases. In spite of the known ancestral taint, a match with Spain was much courted by the royal families of Europe; as an example we may recall the silly eagerness shown by James I. of England to marry his son Charles with the Infanta Maria. Whoever attends closely to history must know that there is a great deal in birth, but not birth as fixed by laws and traced by heralds. A man who is well made, strong, mentally gifted, and able to do much work and stand much strain must be well born; and a race sodden with epilepsy, insanity, and scrofula, whatever its fictitious rank, is necessarily low-born, and in reality is not worth preserving. The royal families of Europe have shown a tendency to segregate themselves, as if the possession of political power conferred some peculiar virtues on the stock, and this leads them to seek alliances which sound notions would teach them to avoid; and to brand as morganatic or left-handed, marriages which would purify their blood. If the people they rule over had any voice in such matters, as they have so deep an interest, they would forbid two royal families, each tainted with insanity, from intermarrying with one another, as fraught with great dangers, not only to the family but to the nation placed under its rule, and which must suffer for the extravagances of its members.

PAPER VI.

ON ST. FRANCIS XAVIER, THE APOSTLE OF THE INDIES.

THE Portuguese, as is well known, first brought an European prow into the Indian seas. In 1497, Vasco di Gama doubled the stormy Cape and landed at Calicut on the Malabar coast. The same improvements in ship-building and skill in navigation which has enabled the Portuguese to reach, helped them to rule over, those distant seas. Their clumsy *caracols*, armed with a few rude pieces of artillery, destroyed the frail barks of the timid navigators of the Indian Ocean with almost as much ease as the English and the Dutch steamers used to run down the piratical *prahus* of the Sunda Islanders. The Portuguese were the tyrants of the seas and the terror of the Mecca pilgrims. They seized upon a number of maritime stations, among others Ormuz, Diu, Malacca, and several of the Moluccas, whence they could command the trade of the East. They twice attempted to take Aden, but without success. Goa was their capital; from it they ruled over most of the towns on the Malabar coast. But the petty princes who then shared the south of the Indian peninsula did not tamely submit to the sway of the Portuguese, whose cruelty and treachery they soon learned to detest. An incessant series of little wars, although generally turning out to the advantage of Portugal, was still too heavy a drain on a country whose population was scarcely sufficient for the vast undertakings it had traced out in India, Africa, and America. The growing power of Spain alarmed them at home, the rivalry of the Spaniards alarmed them in their colonies, and they were getting more and more embroiled in hostilities with the nations of the northern coast of Africa. The Portuguese were, therefore, anxious that their dominions

in India should be placed on a more secure and peaceable tenure, which might save a moiety of the large garrisons necessary to hold so many scattered posts along a permanently hostile coast. "After many deliberations at the Council of Portugal to find some measures which might in future conciliate the Indians, it was determined to try the assistance of religion, in consideration of the fruit they had gained from it in the kingdom of Congo."* This was very much to the taste of the king, John III., and his brother, Cardinal Henry, who favoured the new order of Loyola and introduced the Inquisition into Portugal (1533).

Through the Portuguese ambassadors at Rome, an application was made to the pope for several Jesuit fathers to go out as missionaries to the Indies. Francis Xavier and Simon Rodriguez were sent.

Francis Xavier was born on the 7th April, 1506,† of a noble family in Navarre. His brothers chose the profession of arms; and his sister Madeleine became abbess of a nunnery. His maternal uncle was a celebrated professor of theology at the University of Coimbra. Francis, the youngest of a large family, went to Paris to study. At this time the doctrines of Luther occupied the attention of all the leading minds of Europe; but there is no proof they had any influence on Xavier's religious views. It was while he was delivering lectures in the College of St. Barbe at Paris, that the young philosopher attracted the attention of the ablest of the opponents of the Reformation. It is said that the proud young scholar at first looked with disdain upon the humble and unlearned Ignatius Loyola; but Ignatius perseveringly sought his acquaintance, and at last succeeded in winning him for his new order. He continually sounded in Xavier's ears

* Osorius, "Histoire de Portugal, Contenant les Gestes Memorables des Portugallois dans les Indes," Liv. xx. Paris, 1588.

† I have given the date accepted by most of his biographers. Lucena says that he was born in 1497, that is nine years earlier. See "Historia da Vida do Padre S. Francisco de Xavier, Composta pelo Padre Joam de Lucena, da Mesma Companhia de Jesu." Tomo i., p. 13. Lisbon, 1788. The younger age seems to me to agree better with some allusions in Xavier's own letters.

the words of Scripture: "What shall it profit a man if he shall gain the whole world and lose his own soul?"

On the day of the Assumption, 1534, Ignatius Loyola, Francis Xavier, Peter Lefèvre, with three Spaniards and one Portuguese, went to the subterranean chapel of the Abbey of Mont Martre where they pronounced the four vows of poverty, chastity, pilgrimage to the Holy Land, and devotion to the conversion of the infidels. This was the beginning of the Society of the Jesuits, a name destined to gain a reputation so different from that of Christian. Profoundly acquainted with human nature in its ascetic and religious aspects, Ignatius Loyola knew how to fill the minds of his disciples with a few ruling ideas. The spiritual and religious exercises which he got them to go through were directed to substitute new motives for those which habitually influence the minds of most men, and thus to give life an entirely new aim. Henceforth Francis Xavier, liker to Ignatius than to himself (*jam Ignatii quam sui similior*) lived to carry out the practical conclusion thus stated in the "Exercises" of the founder of his order :*

"It is necessary to make ourselves indifferent towards all created things, as far as is permitted to the liberty of our free will, and not prohibited to it ; so that, on our part, we do not wish health more than infirmity, riches rather than poverty, honour rather than disgrace, a long life rather than a short one, and so in all other things, that we should only desire and choose those things which may lead us to the end for which we were created."

Such an aim, though beyond the reach of common men, has been nearly attained by a few, among whom we may number several of the early fathers of the Order of Jesus.

Soon after the meeting at Mont Martre, Francis Xavier set out for Venice, where he waited on the sick in the hospital for incurables. He practised great austerities: Lucena says that he sometimes would want food for four days at a time.

Xavier was at Rome when the request of the King of

* "Exercitia Spiritualia S. P. Ignatii de Loyola." Romae, 1861, p. 27. See also Lucena. Tomo i., liv. i., cap. iii.

Portugal reached the pope. Henceforth he had a mission equal to his wonderful powers.

When he and Simon Rodriguez arrived at Lisbon, the austerity of their lives made such a deep impression upon the Portuguese court, that the king had some thoughts of keeping them by him. It was, however, arranged that Francis Xavier should go with two assistants, and Simon Rodriguez remain in Portugal. There he founded the Jesuit college of Coimbra, and in his capacity of confessor to the king, was able to be of valuable service to the mission.

Xavier sailed for the Indies in the same ship as the viceroy, Martin Alphonse de Sousa. When he left Lisbon he was thirty-five years of age, seven of which he had spent in the order of Loyola, whose system, maxims, and policy he had thoroughly learned. He landed at Goa on the 6th of May, 1542, after a voyage of thirteen months.

In reviewing the conduct of the English in the East, the worst days of the East India Company would look well by being compared with the corruption of manners which the new apostle found everywhere amongst the Portuguese in the Indies. His biographers assure us that "each Portuguese had several native concubines. Assassination was common. Justice was sold in the tribunals, and the most enormous crimes were only punished when the criminals had nothing wherewith to corrupt their judges . . . Crimes proved in judgment were used only as weights to weigh the bribes of the judges."

The Portuguese were enormously rich ; the sole market for the costly wares of the East was now the "Casa da India" at Lisbon. Religion, however, was forgotten, and even the bigotry characteristic of the native of the Spanish Peninsula seemed to slumber. The Franciscans had already made some attempts at conversion amongst the natives and slaves of the Portuguese, but with unsatisfactory results. The first effect of Xavier's preachings was a species of religious revival amongst the Portuguese which seems to have followed in every settlement he visited. To those who have marked the scanty results of our own elaborate system of missions, with their carefully-trained missionaries, the success of Xavier's preaching

must be somewhat surprising. It arose from two causes, one of which lay in the nature of the man ; the other without.

In person, Francis Xavier was tall and rather spare, but well-proportioned, with dark hair, a fair complexion, and blue eyes. The expression of his face was lively and cheerful ; his conversation benign and courteous to everybody. The mixture of intellectual vigour and moral power, with a courage that nothing could dismay, and an entire abnegation of self, made Xavier one of those striking figures that command admiration wherever they are known. No doubt it was of him that Castelar was thinking when he compared General Gordon to the first Jesuit missionaries.* The people of India are most readily attracted by extremes. A certain want of measure (*Maaslosigheit*), apparent in their religious systems and their literature, is distinctive of their character. They were therefore peculiarly apt to be struck by the blending of energy and asceticism in the life of the new apostle. It was an old article of the Brahminical creed that even the most wicked of men could by dreadful penances raise himself to rule over the gods ; and their sacred books are full of fasts and mortifications, apparently beyond human endurance, which were to be followed by those who wished to attain to a sanctified state.

* The following passage lately appeared in a newspaper. In an article in the *Dia*, Senor Castelar says : "Gordon, the Chinese, the Egyptian, the Nubian, the Abyssinian, the merchant, the warrior, the visionary, the *clairvoyant*, the strange being admired and marvelled at for his great abilities and his extraordinary exploits, is the greatest type of originality among the Saxon races. Casting my eyes back over the heroes of Spain, I find men with whom I would rather compare him than with any hero of our modern times. I do not compare him to our first discoverers of the New World, in whom the character of the warrior predominates over any other character ; I would rather compare him to the first Jesuit missionaries, and among them to the first explorers of India and China. The missionary and the explorer are with great felicity united in the Pacha and the Briton, as they were united in the Jesuit—an incomprehensible mixture of asceticism and worldliness, vehement and clever, with prophetic prevision and mathematical calculation, an informal combination of individual sacrifice and mercantile egotism. . . . Pure morals, firm faith, and a practical mind—these are the qualities recognised in the history of the Asiatic apostles ; and such are the prominent characteristics of General Gordon."

The Mahommedans had similar views. The history of Islam affords many examples of saints devoting their lives to the severest mortifications; and the annals of those times* give evidence of the great respect and religious veneration with which such ascetics were regarded. No gosain, no fakir ever transferred his hopes to another world more completely than Francis Xavier. He made one garment serve for frock and mantle, and lived on a morsel of bread which he often procured by begging. He rarely slept more than four hours a day, and his rest was often broken by visions and pious exclamations. He went about on foot under the burning sun of India with a bell in his hand to call the people to come and listen to him. His whole time was employed in preaching or directing his subordinates; and he did his best to disdain worldly honours, though he did not dispense with worldly influences. But though the Hindus and even the Mussulmans must have been struck by his ascetic manner of life, and though they may have regarded him as a prophet among his own people, and though they may have allowed to him a part of the miraculous powers they so freely attributed to their own devotees and magicians, yet all this would not have induced them to abandon their own religion and caste. Francis Xavier was an eloquent and persuasive preacher, and his letters show that he possessed both force and clearness of expression, with a deep knowledge of the art of gaining over an audience. But this now stood him in no stead; he had not yet learned the Tamil language, and his first preachings were confined to repeating the principal articles of the Catholic creed, with a short exhortation to induce his hearers to adopt them. These he got translated and learned off by heart. Though he seems afterwards to have become able to converse in Tamil, he was never able to deliver a public discourse in that language.

The other causes of the success of his propagandism were of

* There are some remarkable instances of the political influence of fakirs and dervishes in the first volume of Erskine's "Baber and Hamaion." See also "Purchas his Pilgrimes," Lib. iv., chap. iv., § 7; and the autobiography of Jehangir. On the wonderful penances demanded from Hindu devotees, see the "Ayeen Akbery," vol. ii.

a secular character. From the very outset Xavier had been promised the support and assistance of the Portuguese government, and he neither hesitated to claim nor to acknowledge the advantages he derived from them. At first he exerted himself to remove the idolatry which still prevailed in Goa, and then he set out to preach amongst the pearl-fishers of the southern coast of India, many of whom had already consented to be baptized under a promise that they should be protected from the incursions of the Mahommedans.

"It sometimes happens," he writes, "that I baptize a whole city in one day. This is in a great measure to be attributed to the Governor of India, both because he is a singular friend and favourer of our society, and because he spares no expenses or labour to promote the propagation of the faith. By his assistance we have on this coast thirty Christian cities." Xavier's manner of conversion was of the simplest character. He got the creed and different parts of the catechism translated into the Malabar language, learned them off by heart, and repeated them to his catechumens, who, if they declared their belief in what they heard, were at once baptized. A little later, not being satisfied with the energy or subserviency of the Portuguese officials, Xavier sent an envoy to the King of Portugal in order to obtain more ample inquisitorial powers. A new viceroy was sent out with instructions such as Xavier had desired.* These were the establishment of the

* Jarrie, "Histoire des Choses plus mémorables advenues tant ez Indes Orientales que autres Pais de la decouverte des Portugais en l'establissement et progrez de la foy." Bourdeaux, 1608. Liv. ii., pp. 309-13. Mr. Venn, who has written the life of Xavier from a Protestant and critical point of view, accuses him of inconsistency in clinging to temporal aid. See "The Missionary Life and Labours of Francis Xavier," by Henry Venn, B.D., Prebendary of St. Paul's, London, 1862.

In an able and not entirely undeserved criticism of this work in the *Dublin Review*, July, 1864, the reviewer denies that Francis Xavier used the assistance of the secular power of the Portuguese to help out his conversions. There is no space here to quote from authorities. Let the reader who wishes to find proof for himself compare pp. 38-42 of the article in the *Dublin Review* with the original letter of Xavier there cited, and with Lucena, "Vida do Padre S. Francisco de Xavier," tomo i., livro i., cap. xxii.; and with "La Vie de Saint-François Xavier," par D. Bouhours,

inquisition in Goa and on the island of Salsette ; all idols were to be broken ; all secret idolaters punished ; no one was to be allowed to receive a Brahmin into his house ; the revenues paid to the mosques were to be seized and distributed to Christians ; no public office was to be held by Pagans ; the King of Cochin was to be prevented from maltreating the baptized Indians ; no more slaves were to be sold to heathens, and the pearl fishery was to be put entirely into the hands of Christians if Xavier thought proper ; and his letters afford proof enough that he did not hesitate making use of the very extensive powers entrusted to him. He believed that the dominion of Portugal over the Indies was a trust from Providence for the propagation of the Christian faith. There is no doubt that force, judiciously and systematically employed and maintained, has in many cases been effectual in changing the religion of ignorant people, but it may be questioned whether it is lawful to employ it ; whether a fallible creature has got the right to imprint his own religious opinions on a people through persecution and bloodshed. At the time this was scarcely a matter of doubt in any European country. Zwinglius, Calvin, and Knox were as ready to employ the arm of temporal power against the Catholics as Xavier was against the Pagans. Xavier professed to have the humblest opinion of himself ; but then his Church was infallible, and those who died without her pale went to everlasting torments. What was the harm of causing a slight temporary annoyance to a blinded idolator, if it had any chance to save him from such endless misery ? Who ought to blame any one who believes that an infant can be saved from damnation, if it has been sprinkled with water and a few Latin words pronounced over it, and if it dies before it has worn off its baptismal innocence—who can

Paris, 1783, liv. iii., pp. 133-6 ; and *L'Histoire des Choses plus mémorables ez Indes orientales*," &c., par Jarric, liv. ii. chap. ii.

In the "*Epistolæ Indicæ*," pp. 261-288, and in the work of Jarric (see liv. ii. chap. iii. and iv., and also liv. v.), there are accounts written by the Jesuits themselves of the violent and reckless manner in which the inhabitants of the islands round about Goa, as well as those of the mainland of Salsette, were forced to become Christians by Xavier's immediate successors at the College of the Holy Faith.

blame him for snatching the child from its mother and performing the indispensable ceremonial? Xavier felt much delight in thinking that, through the rite of baptism, he had saved the souls of many thousand infants, and he hoped that they would plead in heaven as intercessors for the success of his mission.

After three years preaching on the coasts of India, Xavier sailed for Malacca, from which station he made a number of perilous voyages amongst the Moluccas and the islands around. The Portuguese had already made some conquests in the East Indian Archipelago to render more secure the rich trade in spices. At this time Mahomedanism was being spread amongst some of the islands, half by voluntary conversions and half by the sword; and some of the chiefs preferred the alternative of being baptised to submitting to the law of Islam. Combining the explorer, the traveller, the political agent, and the missionary, Xavier wrote to Europe some interesting descriptions of those newly-found islands. With all the helps he got from the Portuguese, he went through enough of dangers, fatigues, and adventures to make up a life reputation for a traveller of the present day.

On his return to his old Indian converts, after an absence of above two years, he was shocked to perceive that they did not regard him with any feelings of gratitude or goodwill. "The natives," he writes, "have such an abhorrence of Christianity that it is an offence to speak of it. To be asked to become a Christian is like a call to death." In another letter he confesses that "more will be done in conciliating the affections of these people than by striking them with terror."

It must be borne in mind that the apostle of the Indies was both the leader and director of a widely spread missionary movement conducted by a rapidly increasing staff not only of Jesuits,* but also of priests and missionaries of other orders, as well as of native preachers and catechists. Xavier reserved for himself the arduous task of travelling to regions as yet

* In a letter, dated Cochin, 14th January, 1549, Xavier enumerates twenty Jesuit missionaries already in the Indies, four of whom were at the Moluccas, two at Malacca, and four at Socotra.

unvisited by any preachers of Christianity, and his bold and impatient imagination was carried away by the idea of bearing the cross to the countries of the farthest East.

The islands of Japan, already known to Europe through the travels of Marco Polo, had been reached by the Portuguese only eight years before, and Xavier, while at Malacca, had conversed with navigators and traders who had visited that remote coast. A Japanese named Angero (Hansiro), pursued for homicide, had fled to Malacca in a Portuguese ship. He had become possessed with a real or feigned desire to be baptised, and was presented to Xavier at Malacca, who sent him to Goa. There he learned Portuguese quickly, and was baptised under the name of Paul of the Holy Faith. One of the most curious documents in the "*Epistolæ Indicæ*"* is a short account of Japan, written from the information furnished by this man.

The missionaries appear struck for the first time with the external resemblance† between Buddhism and Catholicism: the author finds in Japan most of the doctrines of the infallible Church—one God, the Miraculous Conception, the Trinity, Hell, Purgatory, Heaven, Angels, the worship of the saints, and the existence of one living supreme Head of the Church. The doctrines of Xagua were, he says, brought through China to Japan above five hundred years before, from a kingdom to the west of China named Cegnico, which he evidently imagines to have been the Holy Land, little dreaming it was the country in which he then was. Christianity, the writer had just been informed by a bishop of the Armenian

* "*Epistolæ Indicæ*," Louvani, 1566, pp. 175-198.

† The resemblance between the Buddhist and Roman Catholic ritual was noticed by Xavier, though it does not appear to have struck him so forcibly as we might expect. See his letter, Kagosima, 3rd Nov. 1549, and the note in the French translation, Brussels, 1838, vol. ii. p. 160. It is noticed by Bouhours, "*Vie de Saint-François Xavier*," in his chapter on Japan, and by Bartoli, "*De Vita et Gestis Sancti Francisci Xaverii*," Lyons, 1666, a translation from the original Italian, lib. iii. cap. vi. See also Alcock's "*Japan*," vol. i. p. 336, vol. ii. p. 309. The Catholic ritual has in like manner been mistaken for that of Buddhism. Jerome Xavier (Francis' nephew), while residing at the court of the great Akber, was informed by a traveller that the people of Cathay were Christians, which induced the father to send a missionary to China through Thibet.

Church, had once been* preached in China. It might, he thinks, have been altered and disfigured by some impostor like Mohammed, and thus Xavier, whose intended voyage to Japan was announced, would only have to restore the true faith to its original purity. Some of the points of analogy mentioned in the little treatise were entirely fanciful, yet no two religions of independent origin can resemble one another more closely in external ritual, and yet differ more thoroughly in spirit, than the Buddhist religion and the Roman Catholic Church. No one who has been in a Buddhist temple can have failed to have remarked its resemblance to a Catholic chapel—the paintings, the use of bells and rosaries, the same veneration for relics, the shaven, celibate priests, with their long robes and wide sleeves, the prayers in a dead language, the measured chant, the burning of incense, the orders of monks, nuns, and anchorites, and other institutions characteristic of both religions, have for ages tempted Catholic missionaries to call Buddhism the devil's imitation of Christianity, and induced the learned to conclude that the ritual of the one has been borrowed from that of the other, though it has not been agreed which was the copyist.

Having carefully arranged the affairs of the Seminary of the Holy Faith at Goa, and the entire machinery of the mission, Francis Xavier took ship for Malacca on the 14th April, 1549. On the 24th of June he sailed for Japan, along with Angero and his two companions, in a Chinese junk belonging to a famous pirate, an ally of the Portuguese, who left in their hands hostages for the safety of the apostle on the voyage.* This worthy scandalised the good fathers by worshipping a little image, which he carried on the poop of his ship, and by consulting the devil by means of lots. The voyage is a dangerous one even at the present day, and it was so much so at that time that two out of every three Portuguese ships which ventured on it were lost. Xavier himself, in a letter written from Goa, enumerates and exults in all the dangers—the rocks, the reefs, the straits infested by pirates—but adds, “Does not God hold the tempest in His hands?”

* Tursellinus, “De Vita Francisci Xaverii,” 1596, lib. iii. cap. xix.; Lucena, “Vida,” livro vi. capitulo xiv. p. 413.

Xavier and his companions landed at Kagosima, the native town of Angero, under whose auspices Xavier was well received by the governor, magistrates, and other distinguished people. The apostle was unable to commence his mission at once, though his biographers assert he possessed the gift of tongues.

"We are here," he writes, "like so many statues. They speak to us, and make signs to us, and we remain mute. We have again become children, and all our present occupation is to learn the elements of the Japanese grammar."

His first impressions of Japan were very favourable, and remind us of those of our own ambassador, Lord Elgin, when, after a long interval, those islands were again opened to European commerce. Japan was then under the nominal rule of the Dayri or Mikado, who resided at Meaco (Kioto), but his power was well-nigh reduced to the privilege of giving titles. The authority of the Cubo or Siogun had also become very much relaxed, and the islands were divided amongst fourteen kings,* who in their turn counted chieftains under them that pretended to a greater or lesser degree of independence, according to their strength or opportunity. Their power depended upon the number of their armed retainers, whose services they rewarded by grants in land. There were few merchants, and the labouring classes were little regarded. Japan was then celebrated for its gold and pearls, but owing to the smallness of trade, the country still remained poor. The arts seem to have made as much progress as in Europe. Xavier evidently considers the Japanese as a nation not behind any European one in civilisation, and speaks of Meaco as a greater city than Lisbon. He noticed the same strange customs as our travellers of to-day. Amongst them the well-known practice of Hara-Kiri, or suicide, is not wanting.

Five hundred years before, the religion of Buddha had been introduced from China, and the ancient idols broken (*idolis comminutis*). This primitive form of devotion, the worship

* Solier, "Histoire ecclésiastique des Isles et Royaumes du Japon," Paris, 1627, enumerates sixty-six independent kings, over whom the Dayri was nominally paramount. But what extensive knowledge would it demand to prove such a proposition? We have taken the number given by Angero in "Epistolis Indicis," *ut cit.*

of the Camis or Sintos, which Buddhism has not yet entirely supplanted, seems to have consisted in the adoration of the powers of nature, and the apotheosis of great kings and heroes.* We learn from some of Xavier's successors that Buddhism was divided into two great sects, the most numerous of which was called Xodoxins, who devoted themselves to the worship of Amida. The second was called Foquexus, from the book Foque, which contained their revelation, written in a foreign language. They were the worshippers of Xaca or Xagua (Sankya). Mr. Dickson thinks that the Bonzes or Buddhist priests were now at the height of their power,† but it was the opinion of the early Jesuit fathers that the Bonzes had already lost much of their influence, and most of their revenues, which were originally large. They now subsisted principally upon alms, and upon the sums they received from their religious ministrations and attendance upon funerals. We are told, however, by Xavier that most of the learning of the country and the education of the youth were still in their hands.

There was also in Japan a materialistic school of philosophy, as in India and China. It was confined to the upper classes, and only taught in secret. The Japanese, writes Xavier, surpassed in probity all the nations he had ever met with. They were ingenious, frank, faithful, fond of honour and of dignity. They had a passion for bearing arms, were poor, and lived on rice and a spirituous liquor distilled from it; but they were contented, and the nobility despised plebeian opulence. He notices again and again, with admiration, that almost every Japanese can read, and the defective ideographic character strikes him as better than our phonetic symbols, for he observes that people who use different languages, such as the Chinese and Japanese, are equally able to understand the

* See an interesting article of Father Mounicou, a Catholic missionary, in Japan, on "Mythologie Japonaise," *Revue de l'Orient*, Feb. 1863; also the Introduction of M. Klaproth to the "Annales des Empereurs du Japon," traduites par M. Isaac Titsingh, Paris, 1834; and "Japan Travels and Researches," by J. J. Rein, translated from the German. London, 1884, p. 443.

† "Japan," by Walter Dickson. Edinburgh, 1869.

same signs. He also remarks that the people are of an inquiring turn, candid, and ready to yield to the force of argument. When he had learned enough of the language to speak a little of it, he commenced his mission. Angero had already made some converts among his household relations and friends, but these attempts do not seem to have attracted much opposition, and even Xavier's first preachings excited more attention than contradiction. For the first time in Japan he preached a personal God, the Creator of the Universe, and showed the materialistic tendency of the Buddhist religion. His old lectures at the College of St. Barbe, in Paris, no doubt stood him in good stead. He had already been granted an interview with the King of Satsuma, who had forgiven Angero for his crime, and who now granted to Xavier an edict allowing his subjects the liberty of embracing the Christian religion. On the 3rd of November, 1549, Xavier again writes, directing three of the best missionaries to come out to join him, finding the disposition of the Japanese very favourable to the Gospel. He also mentions that two Bonzes intended to proceed to Goa to be educated at the College of the Holy Faith. His next letter is dated nearly a year after; he had passed the time in studying Japanese, into which language he had translated the principal articles of the Creed, and a short account of the Creation. He had made about a hundred converts, but the King of Satsuma began to look coldly on Xavier and his companions, because the Portuguese vessels, which had at first always come to Kagosima, now sailed to Firando,* enriching his enemy. Mr. Dickson informs us that Kagosima is not a place well fitted for a large tradè, being too far out at sea, and cut off by high ranges of hills from the interior. Nevertheless this desertion made the king disposed to listen to the representations of the Bonzes as to the danger of the people renouncing the religion of their ancestors, and he ordered that any one who received baptism should be put to death. This intolerant decree compelled Xavier to leave Kagosima for Firando, but as they could not yet speak the language fluently, they did not make more than a hundred

* Solier, liv. ii. chap. iv.

converts. They then left for Amanguchi, the residence of a powerful native prince, but Xavier's preaching, which at first was listened to with curiosity, was in the end greeted with ridicule, and he set out with one of his order, John Fernandez, and a Japanese convert, for the city of Meaco (Kioto), of whose vast population and great university, with its hundred colleges, he had heard so much. The country was much disturbed by war, and to arrive in safety he had promised to go as a servant to a nobleman, and it was two months before they reached Meaco. According to his biographers, his preaching was received with ridicule, he was hooted in the streets, and treated by most people as a madman. He found the city half ruined by the pressure of a long war. Formerly it had contained a hundred and eighty thousand houses; now, he thinks there were only a hundred thousand. Xavier was disappointed to find that the Mikado could afford him no protection in preaching the Gospel throughout his dominions; for the Jesuits always cultivated the good offices of the great; not, as they were careful to remark, because the souls of the great were more precious, but because their influence might be productive of much good to the souls of others. Xavier failed to obtain an audience of the Mikado. He left the city in fifteen days, perceiving that he had made a mistake in presenting himself amongst total strangers in the sordid dress which he still continued to wear. Poverty, humility, and self-denial were as much despised in Japan as they are now in England. Accordingly he put on the costly robes of an ecclesiastic of his rank, and presented himself at the Court of the King of Amanguchi, with a train of servants bearing presents, and with credentials from the Viceroy of the Indies and the Bishop of Goa. Refusing the presents offered him in return, he contented himself with obtaining an edict that he should be allowed to preach the Gospel within the bounds of the principality. The king assigned them an unoccupied monastery for their residence. Here Xavier lectured twice a-day upon the Japanese religion. His discourses were numerous attended both by the Bonzes, nobility, and common people. At the end of every lecture he answered the objections which were made against it; and, as he tells us, with trenchant

success. He remarks that those who were most eager and pointed in their opposition were the first to be converted, became his most intimate friends, and revealed to him the peculiar doctrines of the different religious sects. Day and night he was besieged by a crowd of importunate questioners, and called without ceremony to satisfy the curiosity of the great. The result of the conferences, which lasted two months, was the conversion, or at least the baptism, of five hundred people.

In the course of a long letter about those islands, Xavier tells that the Japanese could not digest the doctrine that men were sent down to hell without any hope of ever escaping, or of God relenting. In this respect, they thought their own religion presented a better view of the Divine nature. His converts at Amanguchi were pained by an odious scruple. "They could not see how God was good and merciful, since He had never before announced His coming to the people of Japan, especially as all who had not worshipped the true God were, as he preached, tormented in hell for ever. Thus, their ancestors were deceived through the want of a knowledge of the truth, and borne to eternal perdition." The new converts asked, with tears in their eyes, if there were no hope for their fathers? Xavier, having no doubts on this question, was unable to console them. He could scarcely keep from weeping, though he writes that he was able to give a sufficient reply to their objections.

The abuses which Xavier inveighs against bear a close resemblance to those which existed at that time amongst the Roman Catholic priesthood. The scandalous lives of the Bonzes, their frequent breaches of the vows of celibacy, and the jealousies of the different orders, the sale of tickets which were to be placed to the credit of the sinner in the next world, recall irresistibly the theses of Luther and Tetzels. Xavier accuses the Bonzes of hideous vices, of all of which they were perhaps not guilty. When the apostle inquired into the religious tenets of his opponents, it was mainly for controversial ends, nor were his studies uniformly successful. Xavier was so ignorant of Brahminism that, after more than a year's stay in India, he imagined that the Hindus did not believe in

the immortality of the soul. He left Japan on the 20th November, 1551, after a stay of two years and four months.

On Xavier's return to Goa he found everything in confusion. Those to whom he had delegated the command of the mission in his absence were quarrelling; those under were insubordinate, the finances were not in a good state, and one of his best missionaries had been killed by the natives. Xavier was not fond of power for its own sake: he preferred being a wandering missionary in Japan to ruling over the priests and Indian converts in Goa. "My hair," he writes, "is already grey; nevertheless, I was never more strong and robust." He was now forty-five years of age.

As the circumstances which followed have been much misunderstood and misstated by all preceding authors I have read on the subject, it will be advisable to give this part of his history at more detail. Xavier, in his controversies with the Japanese, had been continually met with the objection, How could the Scripture history be true, when it had escaped the notice of the learned men of China? It was Chinese missionaries who had converted Japan to Buddhism, and had taught them philosophy and history. He then determined to go to China to strike a blow at the root of that mighty superstition. Arranging the affairs of the mission as well as he could, Xavier left Goa, 14th April, 1552, for Malacca, with a merchant, James Pereira, who had been appointed ambassador from the Viceroy of the Indies, and who had drawn deeply on his private fortune to furnish himself with suitable presents and outfits. Besides Pereira, the apostle had three other companions, and a Chinese interpreter. At Malacca, Xavier waited for some time for Pereira, who had gone to the Sunda Islands to take in a cargo of pepper, and other spices, to trade with in China. Whenever Pereira arrived, the Governor, Don Alvaro Atayde, suddenly became hostile, took away the helm of Pereira's ship, and refused to allow him to proceed in his mission. Lucena says that this was because Pereira had refused to lend Don Alvaro a sum of money. Xavier, after trying in vain the intercession of the vicar-general to overcome the obstinacy of the Governor, showed the commission of the pope, making him nuncio in all the Indies, which for ten years he had kept con-

cealed from everyone, like a sword in a scabbard. But all in vain, Pereira was not allowed to go. Xavier, however, went on in Pereira's ship, which bore the same crew and cargo. Pereira's goods were confided to an agent; but some of the freight must have been at the disposal of Xavier, for we find him, arrived at the island of San-cian (Sanshan), promising pepper to the value of three hundred pieces of gold to a Chinese merchant, if he would undertake to land him on the Chinese coast. No one would assist him when it came to the push, so great was the fear of the penal laws which guarded the coast of China against all foreigners. Though San-cian is but half-a-day's sail from Canton, the apostle remained there for more than a month, gnawed by the most incessant desire to gain the land of China, and soothing his wounded feelings by prosecuting a complaint to the King of Portugal, and getting a bull of excommunication launched against the Governor of Malacca.

On the event of his being put on shore, Xavier had formed the desperate design of going straight to the chief mandarin of Canton, delivering the letter of the Bishop of Goa, and explaining that he had come to teach the emperor the law of God. "He knew the danger," he writes, "but what danger was so great and so terrible as that of distrusting and offending God, by whose inspiration this undertaking had been begun?"

San-cian was a place of rendezvous between the Chinese and Portuguese merchants. All the other ships had sailed away, having discharged their cargoes. Xavier had caused a hut to be erected, in order to celebrate religious worship. He had, we learn from his own letter, dated 22nd October, 1552, been ill, apparently of remittent fever, for fifteen days, but seemed in the fair way of recovery. The season had been an unhealthy one. His illness returned with greater violence than before, and feeling distressed by the swinging of the ship,* he caused himself to be carried to a hut on the shore.

* Lucena (tomo iv. liv. x. cap. xxvii., p. 392), and other biographers, say he left the ship, though the narrative of Melchior Nunez would lead us to suppose that he died in the ship (see "*Epistolæ Indicæ*," pp. 200, 201). At a later time a chapel was erected on the place where he died, which, it is reported, the Chinese have recently plundered, out of hostility to the French, who have long assumed the part of protectors of the Chinese Christians.

On the third day of the relapse, in the middle of the night of the 2nd December, 1552, Francis Xavier passed away.

He was buried by the ship's crew, near the shore of the sea, in his sacerdotal robes. According to the account which reached Goa, his body was laid on a bier and covered with quicklime in order that the flesh might be more rapidly consumed, when they could bear his bones to Malacca. They sailed with the news that the Apostle of the Indies had died in sight of the promised land of China.

Three months and a-half after, the same ship (*Eadem navis*), from Malacca, landed at San-cian to exhume his body. They found it as if he had just died, the "clothes entire, and the colour as that of a living man, and exhaling a pleasant odour. They made an incision in the arm, which appeared like living flesh, and was of a pleasing odour." They carried away the body to Malacca, where it was received by an immense procession, which bore it to the place of burial. The body was shortly after secretly exhumed, and carried to Pereira's house. After nine months it was put on board a ship and conveyed to Goa, where the report of the miracle had created much stir. Melchior Nunez, who had succeeded Xavier as head of the mission, went out in a boat to meet the saint's body. "Induced," he writes, "by the example of the Apostle Thomas, I wished to see, and touch, and handle the body to satisfy myself as to the truth of the popular report. The flesh was still delicate and soft, uncorrupted, and exhaled the most pleasant odour." It was landed in sight of a large multitude, amidst the roar of artillery, and borne to the church by an immense procession, the Viceroy of the Indies receiving it as it passed on bended knees. The body was exposed for three days to the public view, and then buried in the vault of the church fifteen months after his death. There is no doubt of the historical accuracy of this singular narrative. The early Jesuit historians, though credulous and superstitious, were honest and candid. The public funeral took place in the capital of the Portuguese possessions in India; and on the intelligence reaching John III., the king of Portugal, he ordered an inquiry, which was prosecuted by the highest authorities in the Indies, and in a juridical form. It is not, then, surprising that Roman Catholics

regard this as amongst the best attested of all the miracles wrought within the pale of their Church, and that her apologists have used it to embarrass Protestant controversialists. We have the letters of four eye-witnesses ; and Peter Maffæus tells us that he had conversed with a fifth at Rome.*

For want of space, my own explanation of the event must be given in a somewhat compressed form. Could it not have occurred to the ship's crew that instead of putting in quicklime to corrode the flesh, they might rather use the fresh and powerful spices with which the ship was charged, in order to embalm it ? This would account for the observation, repeated by every writer, that the body exhaled a most pleasant odour. But embalming is a process which cannot be performed without removing the intestines, and if this be not done by expert hands the marks of incisions will be visible. The best way under the given circumstances to have embalmed the body, would have been to have removed the viscera of the abdomen by an incision in the back, prolonged upwards by snipping through the necks of the floating ribs. The brain could be scooped out by retracting the scalp and trepanning. The cavities might then be filled with spices, and the skin again sewed up. If we collect all the marks of injury which the garrulous candour of the older writers have recorded, but which are missed out by their successors, we find that the traces were more numerous than we might have expected.

Melchior Nunez† noticed that the body had been subjected to some violent handling, for which he accounted by remarking that before it was buried according to the rites of the Catholic Church, it had been, after the custom of the Malays, forced into a small tomb with a mallet ; and he, Jarrie, Tursellinus, and Maffæus all agree that when the tomb was opened at Malacca there was an effusion of blood, which, Tursellinus tells us, exhaled a wonderfully pleasant smell, not so much the odour of blood, he adds, as the odour of sanctity (*ut ille odor non tam sanguinis videretur esse, quam sanctitatis*).

* This was the one who had opened the coffin at Malacca. Maffæus, "Historiarum Indicarum," Lugduni, 1589, lib. xv.

† "Epistolæ Indicæ," p. 203.

In the judicial investigation of Xavier's miracles, several witnesses were examined who had seen the body before it was put into its last resting-place at Goa. Among these, we have the certificate of the physician of the Viceroy, Dr. Cosmo Sairauia, which is here translated from Jarric. It certifies—

"That the body of Father Francis Xavier having arrived in this town of Goa, I went to see it, and touched it on every part, especially on the abdomen, where I found the '*attouchement et corpulement des intestines*' without any embalming or anything else to preserve it free from putrefaction. I found a hole or wound on the left side towards the region of the heart, and requesting two brothers of the company to put in their fingers, and having put them in, there issued by that opening some blood, which I smelt and found that it had a good smell (*qu'il ne sentait pas mal*). The thighs and other parts of the body were entire, and also the flesh, so that by the laws of physics or medicine, they could not be naturally preserved, considering that he had been dead for nearly a year and a-half, and had been nearly a year buried in the earth."

"I testify that this is true by the oath of my profession."

"Given at Goa the 18th of November, 1556."

Tursellinus adds the certificate of the Inquisitor, Ambrose de Ribera, by which it appears that the examination was made by candle-light and that the body was not stripped. He notices a wound in the abdomen (*venter*), and something like a wound (*quasi vulnus*) in the thigh. Recalling that the physicians of those days were ignorant of the art of percussion, the testimony of the doctor may be got over without accusing him of anything but a prudent desire not to offend the Inquisition. Let us then collect all the different lesions noticed on the body:

I. There was a cut in the thorax over the region of the heart. (Dr. Cosmo Sairauia).

II. A cut in the abdomen. (Ambrose Ribera, Inquisitor).

III. A piece cut from thigh. (Ribera and Bouhours).

IV. A piece cut from arm. (Nunez).

V. Sundry bruises on the body. (Nunez):

VI. Effusion from face. (Bartoli).

VII. Effusion from both shoulders. (Tursellinus).

Granting that the Inquisitor, in his hasty examination, mis-

took the abdomen for the chest, and that there was thus only one wound in front of the body, there is still enough to show that the thing was done more clumsily than needs have been. We may, therefore, prefer to believe that the body had been embalmed, to the assumption that the laws of chemical decomposition were miraculously suspended in the case of the remains of Francis Xavier.

It appears that some shrewd people in Goa suspected that the body had been disembowelled and embalmed.* But the doctor's examination was supposed to have refuted this, and the supernatural preservation of Xavier's body has been regarded as one of the best attested miracles wrought within the pale of the Catholic Church.

It is not difficult to guess who the authors of all this were. James Pereira and his supercargo. It was they who had such a deep interest in the success of Xavier's petition to the king. It was they who had reason to fear their own ruin, by the loss of their influence at Court. It was in their ship that Xavier died. It was their men who buried and dug up his body, and it was Pereira who secretly exhumed it at Malacca, kept it in his own house, dressed it up, and sent it to Goa. It was they then who, by a daring fraud, placed themselves under the protection of a glorified saint, when they lost the influence of a political missionary. The Governor of Malacca, Don Alvaro Atayde, was sent in chains to Goa, whence he was conveyed to Lisbon, where he died in prison. Pereira was recompensed for his losses, and rewarded with the favour of the king. The awkward confessions of Nunez, and the other priests who have recorded the event, lead us to imagine that they were ignorant of the imposture which had been played upon them.

The miraculous preservation of a saint's body was no new wonder. Several instances are related in the Ecclesiastical History of the Venerable Bede. The corpse of St. Olaus, of Norway, is said to have remained uncorrupted; and we may recall what was reported of the heart of Joan of Arc resisting the flames which consumed her body. In those times,

* Jarric : "Histoire des Indes Orientales," liv. i. p. 294.

"Epistolæ Indicæ," p. 479.

forgeries as well as myths were common enough ; and the fabrication of holy relics, wonderful crosses, and other pious frauds were one of the causes of the Reformation. In 1778, one arm was cut off and sent to Rome ; and in the Carnival of 1782 the corpse was exposed for three days to the view of the people. We learn from an eye-witness that it was still in good preservation, but dry and shrivelled.* The intestines were wanting.

The tomb of Francis Xavier is still to be seen at Old Goa, and is an object of much religious veneration amongst the Portuguese and native Christians of the Malabar coast. It is no play of the imagination to trace the increased activity which followed the death of the enterprising head of the mission to the tale so widely believed in of the miraculous preservation of his remains. He who closely follows the history of the Jesuits in India will confirm what is here advanced. The King of Portugal, on the story being announced at Lisbon, sent out a commission to inquire into the principal events of the life of the beatified apostle. Xavier himself, save in one ambiguous passage of his letters,† does not allude to any of the astounding miracles so freely ascribed to him by his biographers of later date. One who reads the wonderful tales of the acts of canonisation of Saint Francis Xavier, a hundred years after his death, will be a little astonished on hearing the manner in which his successor at Goa, Melchior Nunez, speaks of these extraordinary performances a few years after they are assumed to have taken place :—" Many things became known of him after death which, while he still lived, remained unknown." And what were they ? One John d'Eiro had told Nunez that Francis Xavier was possessed of the gift of prophecy, and had frequently divined his (d'Eiro's) thoughts ; that Xavier had at Cape Comorin restored a dead man (*mortuum quemdam*) to life. Nunez had also heard from Angero that he had, while in Japan, restored a blind man to sight. And this is all !

* See *Journal Historique et Littéraire*. Luxembourg, tome clxxix. 1^{ère} Mars, 1788, p. 323.

† See letter dated Cochin, 12th January, 1544.

It is likely that the account which followed was that used by Lucena, and which, as he expressly says, only filled ten sheets of paper (*dez folhas de papel*), and did not contain inquiries made in Japan or Cape Comorin.

From Goa as a centre the faith was preached and taught by the Catholic missionaries, and supported by the political intrigues of the Jesuits and the power of Portugal. Some of the immediate successors of the apostle of the Indies worthily followed his heroic example, and shared in his finest qualities. Amongst these may be mentioned Matthew Ricci, Adam Schaal, and Emanuel Diaz, who commenced the Chinese mission, and Jerome Xavier, who lived at Agra, at the court of the great Akber.

We cannot at present pursue any further the history of the Jesuit missions in the East. The only visible results of so much religious zeal and worldly craft are the native Catholic Christians who remain on the Malabar Coast and Ceylon, the people of Philippine Islands, and the Chinese Christians. A sketch of the history of the Church which Xavier founded in the Japanese islands is given in my article, "The Hundred Years of Christianity in Japan," in the 260th number of the *Quarterly Review*.

PAPER VII.

ON FIXED IDEAS.

THE more one knows of insanity, the less does it seem to differ from the normal condition. In both we have the same elements, though in different proportions—anger, fear, anxiety, sadness, grief, pity, suspicion, vanity, pride, desire, the impulse to injure and kill, exist in the breasts of the sane as well as of the insane. In the latter, the passions are stronger, or the power of control is weaker—mania, panphobia, melancholia, the delirium of persecution, or of grandeur, satyriasis, destructive and homicidal impulses, are so many names for the exaggeration of mental qualities common to all men. As by studying diseased action we learn more of healthy processes, so by studying the insane we learn something of mental processes, see the passions in full action, and motives and desires, habitually concealed, now exhibited without disguise. I have often wondered that the painter or the actor has made so little study of the physiognomy of the insane. In a madhouse you may see the most tragic passions: despair, terror, remorse, the man who believes he has committed the unpardonable sin, the wretch who believes he has been sentenced to be hanged or tortured, and is awaiting the arrival of the executioners, the mother who fancies she has murdered her children. It has been sought to make a distinction between sanity and insanity by delusions, but delusions are to be found in both conditions; hundreds of people reputed sane have delusions; history is full of them; every country has its own special delusions. There is no need of giving examples. Each person will select those he thinks the most absurd—that is, those which he himself is farthest from accepting. Delusions grow thick everywhere; if the old ones pass away, new ones soon appear.

In considering the more complicated phases of insanity, therefore, we may gain clearer ideas by studying some of the initial disturbances of thought which trouble the minds of those still sane enough to analyse and record their experiences. Let us begin by saying that one of the most essential features of insanity is the loss of will power, the loss of the faculty by which we command our attention, dismiss some ideas and motives from our mind, while we retain and decide on a certain course of resistance or of action along certain lines. This impairment of will power may be shown in disorder of the intellectual processes, in the incapacity to resist painful ideas, or the proneness to yield to morbid troubles. In some cases people become the victims of fixed ideas while quite convinced of their incorrectness.

Under the name of fixed ideas (*zwangsvorstellungen*) several distinguished physicians of France, Germany, Italy, and the United States have made a curious study of some initial forms of mental perversion. The victim of these fixed ideas often has a hereditary neurosis. He is generally in a depressed state of mind, frequently in an exhausted state of health, troubled with sleeplessness, flushing of the face, and pains in the breast and stomach. In this condition an idea enters the mind, and remains there occupying the visual point of consciousness. This idea attaches to itself all the spontaneous attention, which seems greater than usual, while the power of voluntary attention is diminished. If the unwelcome idea be pushed for a moment from the foreground of consciousness by some exciting or urgent event, it speedily returns, fatiguing the mind with its monotonous persistence. The person over whom such ideas tyrannise, recognises that they have no real or relative importance. They are like silly and uninvited guests who interrupt everything, and take up the attention which is not their due with their ceaseless chattering. They are automatic in this sense, that they arise in the mind without any exertion of the will; but they have nothing to do with unconscious cerebration, as Adriani has suggested, for, indeed, an overwrought consciousness of their presence is the most distressing feature in the case. They may endure a long time; one is said to have lasted eight years. They do not

often end in insanity, though cases of the kind have fallen in the way of physicians of asylums. The most curious descriptions of these aberrations have been made by consulting physicians to whom patients have come in the hope of gaining relief. Though the varieties of these fixed ideas are endless, they seem to fall into groups, which may go under such names as the METAPHYSICIANS, who, like the old schoolmen, occupy themselves with the subtlest questions in philosophy; the ARITHMETICIANS, who cannot keep from counting and calculating; the MEN OF LITTLE FAITH, who are possessed with dominant ideas of their own incapacity; the REALISTS, who are taken up with mean and trivial details, such as engage people of small intellect; the MUCK-RAKE MEN, who are always in search of dirt and trying to remove it; the SCRUPULOUS, who are always weighing things in their conscience and suspecting that they have done wrong, and doubting whether they are doing right; and the FEARFUL, who are always afraid of compromising themselves and looking round for dangers, and live in perpetual alarm. The first of these divisions has been well described by Dr. Legrand du Saulle,* and by Dr. Oscar Berger,† who has given it the name of Grübelsucht, or the Metaphysical Mania.

The mental symptoms of this disorder consist in an irresistible current of ideas, taking the form of useless inquiries as to the how and why of everything, pushed beyond the limits of what all people of any sense have treated as the usual range of the knowable.

A well-educated young man, a student of law, describes his own thoughts and feelings when subjected to this distressing condition. To take one of his own examples, the idea comes to him, why has a chair four legs? Why not one only? The answer occurs, because according to the laws of nature, a stool with one leg would not stand; but then his wandering thoughts hurry him away with a succession of endless ques-

* "La Folie de Doute, avec Delire du Toucher," Paris, 1875.

† See *Archiv für Psychiatrie*, vi. Band, i. Heft. I have made use of my own resumé of Dr. Berger's first paper, published in the *Journal of Mental Science*, January, 1878.

tions. Why is it a law of nature? Why is there not an attractive force which would keep a chair upon one leg? At the same time, while his thoughts were hurried on with feverish activity in such useless speculations, his attention was still occupied in the observation of the accustomed objects of daily life, though after a weak and drowsy fashion. There were, therefore, two simultaneous currents of thought in his mind. He also described himself while subject to these paroxysms as being in such a hazy condition that he did not distinguish what he had dreamed from what he had read, or seen in a picture from what he had lived through. His memory and powers of concentration were weakened, and often all things round about him appeared small, so that he seemed to himself unusually large in relation to them, or the reverse. He also noticed that his taste for particular notes in music was variable. Sometimes he preferred the octave in the middle of the piano, and the higher tones appeared unpleasant. At another time the higher tones displeased him, and he again was fond of tunes in which the middle octave prevailed. These paroxysms lasted from one to twelve hours. They were accompanied by a feeling of distress, a burning sensation in the head, and redness, with sometimes nervous twitchings, in the face. Occasionally too there was a sudden bending of the head upon the chest. The paroxysms left him in a state of mental exhaustion and bodily lassitude. Apart from this, his general health was said to be tolerable; and he completely recovered under the influence of a summer's residence in the country, the use of bromide of potassium, and some mild hydropathic treatment.

AGORAPHOBIA.

Dr. Westphal of Berlin has described one form of these emotional derangements with a happy lucidity which at once caught attention. He calls it Agoraphobia or Platzfurcht: the fear of squares or open places. He gives from his own observation three instances of this singular affection, all of which seem to have occurred in Berlin. These persons felt a peculiar uneasiness or anguish in crossing wide streets, squares, or free unenclosed spaces. This distress was often accompanied with

trembling and beating at the heart, and a feeling of warmth in the face. The first of his patients said that when crossing a large square in Berlin he had the sentiment as if the space to be traversed was very great, miles wide, and that he could never traverse it. Sometimes when his thoughts were occupied he could get across without uneasiness. It rendered him more at ease to go with some one talking, arm in arm, or to follow a coach crossing the square. He always felt relieved as he neared the houses on the opposite side. Alone he did not dare to cross a square, but would walk round it. Being asked what he would do if he were brought into an open meadow, and then suddenly left alone; he said the thought was to him intolerable, he could not think it; perhaps he would throw himself forward on the ground, and hold on to the grass with his hands. The same feeling of distress came upon him when he passed along streets bounded by walls, or long pieces of building, or through the streets on Sundays or holidays when the shops were shut. One of these unfortunates felt relieved when he used a walking-stick; the other two seem to have derived no relief from this simple precaution. The feeling of distress was sometimes overpowering, and prevented them crossing many of the wide streets and squares in Berlin. It was different from giddiness, and was unaccompanied by any trace of insanity. They were all young men. Dr. Westphal afterwards quoted another case of this hyperæsthesia. The subject of it was an officer, who was thrown into the greatest distress, accompanied by a beating of the heart and profuse perspiration, at the sight of a large room, a long street, or a wide square. This feeling was generally absent when in command of his troop, and never attacked him when riding in the open country. Dr. E. Cordes, the proprietor of a hydropathic establishment, treats agoraphobia as the result of hyperæsthesia of the nervous system. It arises from a feeling of personal insecurity. The patient is overpowered by a leading idea: in moving across a square this leading idea is, "You can't get across; you will fall; you are paralysed." On entering a room the idea is that people are looking at you and remarking your condition. In walking over a plain it is, "You will never be able to get home." The

patient is aware that this notion is not based on any evidence ; he knows that it is absurd, and that it is weak to yield to it. Nevertheless it seizes upon him, and he cannot banish it from his mind. In a similar way the mesmerist gains a control over the mind of the mesmerised by suggesting some leading idea which gains an overpowering hold over the victim's mind. Dr. Cordes found such cases not uncommon in his hydropathic establishment. They all suffered from irritability and weakness of the nervous system, in some cases brought on by great mental exertion, in others by dissipation or disorder of the stomach ; and many of them presented various symptoms of nervous derangement. It is difficult to explain why an open space should become an object of alarm, especially as the opposite condition has been the occasion of similar uneasiness. This has been named claustrophobia or the fear of closed spaces. The subject is alarmed on entering a small room or carriage, and is relieved when he gets into the open air. Thus an artist in Italy, who was shut up alone in a studio to paint for a competition, was seized with an unaccountable distress. He could not stay ; he tried the doors, and finding them shut, went out by a window. On getting outside he felt quite relieved.

In the one condition the patient feels a sense of security from the contiguity of walls, especially if diversified by shops or windows, and the opening of a space on either side strikes him with a sense of insecurity, such as many feel in traversing a wide desert plain or prairie. Some people seem to use one point for support or guiding more than others, and to miss its absence ; others, who are firmer in nerve, will do without any, or scarcely any point of support. I have known a man who on several occasions felt the desire of throwing himself off his horse after it became so dark that he no longer saw the ground. Dr. T. Grainger Stewart, in his "Lectures on Giddiness," mentions a lady who feels great discomfort if she sits in a building with a lofty ceiling. She always requires to sit under a gallery in the church, it being necessary for her comfort that she should have the impression of a place not far above her head.

In the other case, that of claustrophobia, the suggestion of

alarm is probably the same as that of an animal caught in a box or room. He is shut in on every side, he can't get out, he may be crushed or overwhelmed. Dr. Krafft-Ebing, of Vienna, says that the news of a fire in a theatre makes nervous people for months incapable of entering such a building. It is likely they have not forgotten the catastrophe in the Ring Theatre.

Writers on nervous diseases have, with the aid of the Greek Lexicon, made a long list of diseases of this class. They have all for their groundwork a condition of the nervous system at once weak and hyperæsthetic, what is often called neurasthenia.

The two following cases are taken from Dr. Legrand du Saulle :—

"M. Antoine B., a merchant, thirty years of age, father of two children, intelligent and well educated, was diligent and successful in business. He says that his mind is quite absorbed by two things. Whenever his attention is disengaged for a little he falls to pondering on something connected with colours and numbers. He asks, for example, why colours are unequally diffused? Why the trees are green? Why soldiers wear red trousers? Why women are married in white? Why black is the colour of mourning? Why some papers are blue, yellow, red, or grey? Wherever he goes, he counts the number of articles of furniture or clothes of such a colour. If he travels by rail, he calculates how many bridges or rivers he passes, or how much braid, how many buttons, nails, and nuts there are in the carriage. If he shuts his eyes to seek sleep, he feels himself forced to consider the question—Why has the rainbow seven colours? He deploras his condition, professes himself ready to do anything for his recovery; and goes away saying, 'You have forty-four books on that table, and have seven buttons on your waistcoat. Excuse me, but I cannot help counting.'"

"A man of sixty years of age commenced to feel, when fifteen years old, an aberration of mind, which never ceased for more than forty-four years. When he went to the theatre, he returned tormented by the desire of knowing all about the actresses whom he had seen. He wanted to know their birth-place, their family, their age, their habits, their manner of life. This desire was so lively and persistent that it constituted a fixed idea. It distressed him so much that he gave up going to the theatre; but soon his curiosity, in place of only relating to actresses, arose in meeting any woman whom he thought

pretty ; he concealed his fixed ideas ; followed the profession he had taken, and married ; but the fixed idea remained. Whenever he saw a woman whom he thought good-looking, he was for hours in an anxious condition. For several years he has lived retired from business, during which his disorder has made great progress. When he goes out, he is accompanied by a person who has no other occupation than to reassure him about all the women whom he meets. He always puts the same question : Is she pretty or not ? His companion answers that she is plain, with which reply he is generally satisfied. But ordinary precautions do not always suffice to avert crises, which do not pass away for several hours. At last he came only to go out by night. On one occasion he went in a night train. After travelling thirty-five miles, he asked if the woman who gave the tickets was pretty or not ; and his companion, being fatigued, incautiously said that she had not noticed, and could not really say. Then there was so much distress that they were obliged to send some one to ascertain, who brought word that the woman who gave the tickets was ugly."

In this case most people will think that the man had passed the limits of sanity.

The following amusing account of what he calls Mysophobia, or fear of contamination, is given by Dr. Hammond, of New York, in his "Treatise on Insanity." He was consulted by a widow lady, thirty years of age, who was believed to be sane in every way save in the following points, which are given in her own words :—

"I was, about six months ago, reading a newspaper one evening, when I came across an account of a man who, it was believed, had contracted small-pox from handling bank notes which had been a short time previously in the possession of a person suffering from that disease. The circumstance made a deep impression on my mind, and, as I had only a few moments before counted quite a number of notes, the idea struck me that perhaps they had been handled by some person with a contagious disease of some kind or other. I had washed my hands just after counting these notes ; but, thinking that I had not possibly removed all the taint, I washed them again. I went to bed, feeling quite uncomfortable, and the next morning paid more than usual attention to the washing of my hands. I then recollected that I had placed the notes in a drawer of my dressing-table, in contact with linen which I had proposed putting on that day. I changed

my intention, however, and selected some from another drawer instead, sending the other to the laundry. I then put on a pair of gloves, took out the notes, placed them in a letter envelope, and had the drawers thoroughly washed with soap and water.

"Reflection upon the matter brought to mind the fact that, after counting the notes, I had touched various things before washing my hands, and that therefore I was still in danger. The very dress that I wore then was the same that I had on now, and my hands had been more or less in contact with it all the morning. I felt myself, accordingly, forced to wash my hands, to take off the dress, and again to wash my hands.

"From that I went on from one thing to another. There was no end to the series. I washed every thing I was in the habit of touching, and then washed my hands. Even the water was a medium for pollution, for, no matter how thoroughly I wiped my hands after washing in it, a portion still remained, and this had to be washed off and then again the hands washed. There was no end to it. The soap became connected in my mind with contamination, and I never used the same piece twice.

"Now, I can touch nothing without feeling irresistibly impelled to wash my hands afterwards. If I am prevented doing so, I experience the most horrible sense of fear. I am always looking at my hands to ascertain if I can see anything on them, and I have a lens which I use to aid my eyesight. I have no particular apprehension of contracting small-pox, or any other disease that I can specify. It is an overpowering feeling that I shall be defiled in some mysterious way, that presses on me with a force that I cannot resist. As to shaking hands with any person, nothing would persuade me to do so unless I had on gloves at the time.

"And, lately, even gloves do not seem to afford me entire protection. I know they are porous, and that therefore the subtle influence, whatever it may be, is capable of passing through them to my hands."

"On my asking this lady if she really believed in the theory she had constructed, she answered that at times she was convinced that she was in error, but only for a short period, as the original ideas returned in full force; that when reasoned with in regard to the absurdity of her notions, she was persuaded for the moment that she was wrong, but as soon as she was left to herself, she was back in the old train of thought.

"The expression of the patient was one of anxiety. As she sat talking to me she was continually rubbing her hands together, and looking at them closely every moment. After I had felt her pulse, she took a handkerchief from her pocket, moistened it with a little Cologne water which she had in a phial, and wiped the spot which my fingers had touched."

It frequently happens that the idea which occupies the mind of the person is the very last one which he would willingly receive. Thus a pious person is haunted with profane notions or impious doubts. In horror he resorts to prayer, but finds that profane or burlesque turns of expression are so mixed up with his supplications that he is obliged to discontinue them. Bishop Butler, the celebrated author of the *Analogy*, was much troubled by a desire to break out into profane expressions so vehement that he could sometimes scarcely restrain it. Sometimes ladies have felt the desire to say to people around them the most gross and outrageous remarks. In many cases this lasts for a long time, during which the struggle to repress themselves is rendered painful by the fear that at some moment they will break out and disgrace themselves, but the very fear that these words will burst forth serves to keep them in the foreground of consciousness. Sometimes, in spite of every effort, they burst forth. M. Briquet mentions a lady very well known in society who used suddenly to stop in the middle of a conversation to repeat the words, "*Petit cochon*" (little pig), and other rude expressions. Sometimes when the impulse is a harmless one the subject of it does not see any reason sufficiently strong for struggling against it. Thus, a diplomatist used to open his window from time to time to imitate the crowing of a cock. A poor young man was seized with a desire every time he heard the chimes of the village clock to repeat them; afraid of being laughed at, he used to go aside in order to indulge this impulse. It rendered him very unhappy, and in the end the morbid impulse left him. Unfortunately these impulses are sometimes of a painful character. The idea of committing suicide often thus remains fixed in the mind and sometimes passes into execution.

This is illustrated by the following cases.* A lady had seen her housemaid throw herself into a well. This made such an impression upon her that she could not even see a ditch without running to throw herself into it, crying out at the same time that they should hold her back. In other things she was perfectly sane, although this morbid desire caused her to be very sad.

F. de G., an officer, twenty-seven years of age, was suddenly possessed with the idea of taking away his own life, and after unsuccessfully trying to get his servant to bring him a pair of pistols or a sharp knife, he threw himself over the window of the second storey, without however effecting his object. He could give no explanation of this action save that the idea came to him with irresistible force. He regarded it with shame and horror, and prayed God to give him strength to resist it. By going to a watering place and travelling about a little he made a complete recovery.

It occasionally happens that mothers or nurses conceive the idea of killing the children under their care. The notion haunts them, though they repel it with horror. Sometimes they confess the horrid thoughts brooding in their minds, and beg that the child should be taken from them in case they should be impelled to yield to their morbid impulse. Krafft-Ebing, who records one of these cases in a nursery-maid, says that after the fixed idea had passed away, she was allowed by the philosophical, and possibly phlegmatic, German parents again to have the charge of the child. To draw a line between the dominant ideas which simply engage the attention and those which may in a moment overcome the resistance of the will and pass into action, is, in my opinion, impossible. We cannot so easily know the end of the process which is going on in the inscrutable mechanism of the brain. We cannot say where and when sanity ceases and insanity begins. Fixed ideas occur in both. With the insane they are more frequent; but the passage from apparent soundness of mind to derangement is often abrupt and dangerous.

* "Des Impulsions dans la Folie et de la Folie Impulsive," par M. le Dr. H. Dagonet, Paris, 1870, p. 66.

Take the following instance from Paul Jacoby: Barbara Erkhov, a Russian peasant woman, aged twenty, had a son a year after her marriage. During her confinement she had been in low spirits, refusing food, and complaining of headaches. Two weeks after the child's birth her husband went to a neighbouring village, leaving in the house his wife, his mother, and his grandfather. While Barbara was suckling the child, the mother-in-law made a fire in the stove, and left the room for a moment. Barbara instantly threw the child into the fire and lay down on a bench. The mother-in-law, on returning to the room, sees the child in the stove and pulls it out; but it dies in her arms. On being arrested, Barbara could not explain her action; something had seized her; she had thrown the infant in the fire without knowing why, automatically, without thinking. Before this she had always been thought sane. She seemed on good terms with everyone, happy in her home, and fond of her child.

Fixed ideas are common with patients in asylums. I once saw a man in a criminal lunatic asylum who stood in a corner, repeating for hours the same words, "I stole six bottles of wine; damn six bottles of wine!" When disturbed, he would walk to another place, and go on with his senseless repetition. In this condition he would only take his food from the ledge of the window. These fits would come on suddenly, last for two or three weeks, and then suddenly he would again become intelligent and willing to work. The last time the fit came on he kept repeating, "Saw off my leg!"

It does not seem to me that we are able to explain the persistence of such ideas by a reference to known facts in the physiology of the brain. We notice, however, that a similar persistence occasionally exists in our sensations. As a rule, the feelings excited by the outward world cease after the withdrawal of the cause. One sensation gives way to another. The changes imprinted on the retina by refraction of light pass away so quickly that we can see a great succession of objects in a very short time. In like manner, we can distinguish one sound after another. If they succeed one another too rapidly, they appear to be continuous. But with

some people, in unhealthy conditions such sensations are more persistent. If one pinches or pricks them, they do not feel very quickly, but the painful impression remains. The perception of a colour persists for some time, so as to hinder the perception of another new colour; or, on looking at a face, or a row of faces, the images remain for some time after we have withdrawn our gaze from them. But these persistent sensations never last so long as the abiding mental impressions which we have mentioned.

In saying that fixed ideas are common to the sane and insane, we do not mean that such ideas are always healthy in the one and unhealthy in the other. When a dominant idea takes the form of duty, patriotism, benevolence, or religion, it may be useful or pernicious from the direction it takes. We see in history men like Francis Xavier or Garibaldi, whose life is led by one dominant idea; and it is a worn-out commonplace to talk of all such people being endowed with a strong will or decision of character. Sometimes this is the case; but it is as well to remember that a man may be the slave of an idea instead of its master. The most remarkable thing about the fixed ideas we have been considering is their involuntary character. They struggle with and overpower the will. When they hurry a man to say, think, or do things different from the rest, he is in danger of being put down as insane. When they seize upon a large number of people at once, we have a mental epidemic, which a calm-sighted observer may think to be quite insane, but which it is dangerous to call by its real name. Of these there are many in history; for it is quite erroneous to treat the history of the human race as that of the sane alone. In point of law, all men are either sane or insane, but this is a merely arbitrary distinction of the legal mind. There are hundreds of thousands of people who have delusions and impulses which are common with those of the insane; and these people have often a great influence upon their neighbours, much more than their neighbours over them.

Hecker, in his "Epidemics of the Middle Ages," has described some of these wide-spread outbursts of insanity, the most striking feature of which was great motor disturbance.

This was natural to the Middle Ages; for the insanity of a period will always bear a relation to its character and pursuits. Its insanity shows either the excess or the reaction of its activity. Melancholy and exhaustion are the characteristics of the insanity of modern civilisation, the outcome of discontent, striving, and restlessness. The Tanzwuth, or dancing mania, appeared in 1237 at Erfurt, and at Utrecht in 1278. A great epidemic took place in 1374 at Aix-la-Chapelle. Numbers of people commenced dancing without control in the streets and churches for hours together until they fell down exhausted. In a few months the mental epidemic had visited Cologne, and spread over the Netherlands. It was attributed by the clergy to demoniacal possession; but we see clearly the influence of fixed ideas and the power of imitation acting on those disposed to yield to them. Another such epidemic appeared at Strasburg in 1518, and spread over the Lower Rhine and Flanders.

For another instance of the power of fixed ideas, let us take the Crusades. In a miserable period of ignorance and violence, when the lot of most was hard and mean, and force ruled everything, life was unsafe at home, and travelling beset by such perils as almost to ensure destruction, a craving to wander beset hundreds of thousands of people. The idea took the shape of going to Palestine to rescue the Holy Sepulchre; but the Mohammedans had been in possession of Jerusalem for hundreds of years, nor were there any favourable circumstances to encourage the nations of the West in such an expedition. The political considerations which modern historians have given to explain or excuse the Crusades did not, as Hallam has truly observed, present themselves to the first Crusaders. Granting the existence of religious fanaticism, political intrigue, or the hope of gain amongst some of those who helped on the movement, we can only see, in the mass of human beings who were driven by a fixed idea to perish on the plains of Syria, one of those migratory cravings which, in ancient times, set family after family, and tribe after tribe, wandering over the unpeopled earth. The first Crusade was the most striking realisation of this crude sentiment. A stream of about 300,000 people—men, women, and children,

of all ranks and conditions—poured through Hungary and Bulgaria. As they had made no arrangements for subsistence on the way, they could only live by plundering the country through which they passed; and the inhabitants revenged themselves by slaying them in thousands. Alexis Comnenus, the Greek emperor, made haste to ferry the remnant which reached Constantinople across the Bosphorus, and they were slaughtered with little resistance by the Sultan of Nice. Their leader, Peter the Hermit, escaped to Constantinople, regarded by the Greeks as a maniac who had allured a number of madmen to follow him. A striking instance of the insane character of the crusading movement is given by Hallam.* “In 1211 a multitude, amounting, as some say, to 90,000, chiefly composed of children, and commanded by a child, set out for the purpose of recovering the Holy Land. They came for the most part from Germany, and reached Genoa without harm. But finding there an obstacle which their imperfect knowledge of geography had not anticipated, they soon dispersed in various directions. Thirty thousand arrived at Marseilles, where part were murdered, part probably starved, and the rest sold to the Saracens.”

In process of time the idea lost its power, and new crusades could not be organised, not because people's beliefs and motives had perceptibly changed, but because the human mind had lost its receptivity to the implantation of fixed ideas of such a character, though they continued to act now and then upon separate individuals. Thus Petrarch,† who was born more than thirty years after St. Louis had vainly tried to revive the crusading spirit, wonders at the strange desire which now and then seized the white-headed old man to leave his sweet and tranquil home, and his loving family, and drag his wearied body, broken with years, to Rome to see the semblance of him whom he soon hopes to see in heaven.

In countries where the people are ignorant and credulous, the intellect untrained, and the will apt to yield to a sudden impulse, such ideas still have power to move whole masses of men.

* “Europe during the Middle Ages.” London, 1834, vol. iii., p. 342.

† Sonetto xii.

A Greek physician, Clon Stephanos, has lately called attention to a recent appearance of the dancing mania in Thrace, in some villages of the valley of Kior-Kaza, which signifies blind or shut-up country. Amongst these ignorant people, the festival of St. Constantine, which is held in May, is accompanied by dancing and orgies of which the principal part is taken by the Anastenaria, men and women who are regarded in the country as sacred beings. M. Stephanos shows that most of the symptoms of the dancing mania, as seen during the Middle Ages and in the fifteenth century, were in our own day reproduced by the Anastenaria at Kior-Kaza. The disease appears in the hot season following the religious festivals, and is accompanied by dancing, principally amongst ignorant and superstitious men and women, more rarely in persons entirely free from superstition.

At the present day, the myriads of Hindoo pilgrims who flock from all parts of India to Hurdwar, Puri, Muttra, or Benares, show a state of mental weakness and impressionability similar to that which once existed in Europe. No better proof of the power of fixed ideas over large numbers of people could be adduced than the delusion which was the cause of the great rebellion in India in 1857.

It commenced by a report that the military authorities had used the fat of cows or pigs to grease the cartridges for the rifles which were to be issued to the Bengal army, and which it was necessary they should bite before loading. To put such cartridges to their lips would have entailed loss of caste to the Hindoos, and the pig is an unclean animal to the Moham-medans. The idea was conceived that it was the intention of the Government thus to ruin the caste of the Sepoys, make them Christians, and render them available for foreign service. It spread with great rapidity through the whole Bengal army. It has been denied that any such greased cartridges were ever issued at Barrackpore. At any rate, if the mistake was made, there was no intention that it should be repeated. The notion was weak and foolish, but it entered the minds of thousands of men with astonishing force and persistence, and was received by thousands of Hindustanis who had nothing to do with the Sepoys. The European civil and military authorities at first

paid little heed to it. They could not conceive of an idea so foolish gaining possession of the minds of grown men ; and when it was stated in Great Britain that this was the real cause of the mutiny, many writers on the subject refused to entertain it—that is, men of the same class of intellect who made light of the notion in India, refused in our own island to believe that an idea so whimsical could produce consequences so real and disastrous. They could not conceive of hundreds of thousands of people acting upon an insane idea, although, perhaps, future times and other nations may think some of their own ideas quite as unfounded.

Being in India at the time, I paid great attention to the origin of the mutiny, and never had any doubt that the cartridge question was the main cause of it. Many other instances of such fixed ideas could be found in history very likely much misstated by the ignorance of psychology shown by the historians of the past.

PAPER VIII.

FOLIE À DEUX—A MAD FAMILY.

IT seems likely that, as the same causes produce the same effects, in a family equally exposed to unfavourable influences, two or three brothers or sisters might become insane at once; and this might especially be thought to hold good with twins. This is sometimes realised, though it is rare that the insanity takes in both such a decided form as to require them to be restrained at once. I have seen twins turn out idiots. In one case the sister was so deficient in intellect that she never learned to speak, whereas the boy recovered from epilepsy, and, though weak-minded, made a wonderful improvement under training. In another case the boy was squat and stunted and could not speak, while his twin sister was taller by the head, well made, and normally intelligent. Dr. M'Dowall has published an account of two young men of twenty-one who were twins, the natural sons of a woman who was a strange combination of folly and vice. The twins bore a close resemblance to one another, not only in their appearance as was shown by a lithograph, but in their characters. They were both subject to delusions of suspicion, and given to fits of irascibility under which they commit assault. Both were in the asylum at Morpeth. Though they thus possess in a high degree Cicero's test of true friendship, *idem velle et nolle*, they hate one another, and fight when they meet.

Sometimes, in a quiet household, two or three brothers or sisters slowly pass from peculiarity into lunacy. As insane people seldom notice anything wrong with themselves, it may happen that the maddest of them all goes and denounces one of the rest, and gets him or her under confinement, his own

insanity not being detected until a later period, or perhaps putting a greater restraint upon himself, he escapes detection.

Once when I had temporary charge of an asylum, there were brought two patients, husband and wife. They had that likeness which married people seem sometimes to acquire by long living under the same habits and circumstances. They both had the same sad expression and sallow complexion. They made no protest against being deprived of their liberty, seemed indeed to acquiesce in it. They said that they found themselves overcome with gloomy thoughts. They ceased to take an interest in anything, refusing to make any exertion, and to take care of themselves; and having no children, they fell a burden upon the parish. In England they would have been sent to the workhouse, for they were not noisy nor threatening; but as the Scottish poor law does not allow relief to able-bodied people, they had been sent to the asylum as insane. I examined each of them separately, and though they agreed so closely in their statements that it looked as if they had arranged together what to say, I could make out very little difference in their condition. I suspected that one must be simulating in order to keep near the other. In that case I thought it would be the woman. The man went to the male wing of the asylum, and his wife to the female. At dinner time they met and spoke a few words together every day. The woman improved slowly, and was discharged in a few weeks. I cannot say what became of the man.

The French Alienists would call these cases of simultaneous insanity (*folie simultanée*). The following is an instance of what they call *folie imposée*.*

Two sisters, Pauline and Leontine X., had derived from their father a hereditary tendency to insanity. They lived on a small pension. Leontine, who was three years older than her sister, when about forty-seven became unquiet and suspicious, and had hallucinations of hearing, and complained that she heard noises at night which were intended to prevent her sleeping. Pauline tried to disabuse her of these notions,

* Contribution à l'Étude de la Folie à Deux, par le Dr. E. Marandon de Montyel. *Annales Medico-psychologiques*, Paris, 1881, p. 28.

and the argument between them went on day by day. For more than six months Leontine insisted that some enemies intended to carry off an old family picture which they had in their *salon*, and which they thought very valuable. At last, under the incessant struggle, the hereditary germ of insanity showed itself in the elder sister also. When Leontine affirmed that she heard footsteps in the *salon*, Pauline's imagination got excited, and she believed that she heard them too. Then she began to lend a more attentive ear to the words of her sister, and to hearken for the thousand sounds which stirred the silence of the night. Finally, she arrived at the same hallucinations and the same delirious conceptions as her younger sister. As long as Pauline had remained sane, she had watched over Leontine and prevented her exposing or compromising herself. Now their derangement could no longer be concealed. The neighbours complained to the police, who tried to get entry into the house. They found the doors barricaded, and when they succeeded in forcing their way in, the two ladies were seen standing with weapons in their hands in front of the picture. On a promise that the painting should be respected, they ceased to resist, and were both taken to the asylum at Toulouse. There it was found impossible to separate them, as they fell into such a state of despair and agitation that they were obliged to leave them together. Pauline the eldest, was now the more insane of the two. She died five months after admission of heart disease. During her illness she was nursed by her sister with the most touching devotion. Leontine had become so demented that she forgot her sister's death in three days. She said Pauline was away on a journey to Albi, adding, "I do not understand why she has left me here: we were never separated before."

The following instance of *folie imposée* is also taken from Dr. Marandon de Montyel:—Marie M. was married to a husband who was weak and easy of disposition, and of a limited intelligence. Without any opposition he allowed his wife to manage his affairs, and for a time they lived happily and at their ease, when, in 1875, she lost all the money which she had saved. For two years they continued to meet with pecuniary reverses. She believed the neighbours insulted

her, which attacks she returned with interest. She persuaded her husband that their misfortunes were the result of a plot laid against her; and in 1878 she told him that she heard the voice of an angel who announced that God called her to high destinies, for which she ought to prepare herself by suffering, and that she ought to endure in patience all the evils which He sent her. Her conduct underwent a change; she became sweet and resigned, and left her neighbours in peace. At the beginning of 1880, the angel, whose voice she had heard for two years, warned her that a great trial was in store for her. "The soul of your mother suffers; not only does she need your prayers, but she must have an expiation. God requires that you act as if you were mad to get shut up in the asylum of Saint Pierre. When the moment is come I will warn you." About the beginning of June she was warned in a dream that the time was come, and she felt herself constrained by a superior force to commit eccentric actions. She broke panes of glass, openly tried to carry away a vase in a church, and struck the sacristan who opposed her. She was taken before a physician, who sent her to the asylum, where she was admitted on the 10th June. She was then twenty-nine years of age. She said, "You see well enough that I am not mad. I am come here for an expiation. When I shall accomplish my time the angel will give me warning, and the gates will be opened for me."

She was very reserved, but behaved haughtily to the officers of the asylum, whom she treated as simply carrying out her designs. She was found to have an ulcer in the stomach, which she attributed to the persecutions organised against her, but which was believed to be owing to a somewhat free use of wine. In a fortnight her husband paid a visit to Dr. de Montyel, the superintendent of the asylum, who stated his belief that his wife was not insane, as she had prophesied for several months that she would go into an asylum. The man seemed to the physician to be stupid, though he did not at first show the extent of his delusions. The day after, Marie M. informed the superintendent that the angel had fixed the 1st of July for her leaving, and that she had told her husband to come to fetch her out. The man appeared on

the day appointed, and on the doctor's refusing to allow her to leave there was a violent outburst of anger and threats. Dr. de Montyel then perceived how completely the husband was under her influence, and was induced to study the man's mental condition. When his wife complained about being insulted by the neighbours, he did not inquire whether she had provoked them or resented their thoughtless insults too keenly. His affection and indignation induced him to take her part, and he was induced to believe that they were the objects of persecution, and that their money losses were the result of a conspiracy against them. When she announced that she had heard the voice of an angel, he at first thought that she took her dreams for realities ; but as she persisted in her belief, he began to think that as they had been unfortunate perhaps God would again smile on them, and give them some compensation for what they had suffered. What rendered these delusions the more easy, says Dr. Montyel, was his belief in the supernatural. He admitted the principle, agreeably to the doctrine which he had been taught in his youth, that God was in the habit of communicating with men, and that the angels were the natural intermediaries between heaven and earth. "My wife," he said, "has never been mad. She looked after her affairs as well as ever ; nothing was changed in our home. The strange actions she did were in obedience to the voice of God. Now she wants to get out ; the time of trial is over. No one can keep her any longer."

He threatened the superintendent with the law and the police, and Marie M. made herself troublesome by giving out that the angel had given her a commission to look after the superintendent and watch how he treated his patients. She continued to be aggressive, and treated the doctor as one of the band of conspirators, but suddenly madame became conciliatory, and said that, since the doctor did not believe in the angel, she would not talk any more about him. The husband who was now permitted to visit her was also found to have calmed down ; and after a time, as her health was much reduced by vomiting of blood, she was allowed to return to her home after having been about six weeks in the asylum. In this case it seems clear that while his wife was insane the

husband was simply weak and credulous. By the superior force of her intellect, and the energy of her character, she was able to lead him into delusions which he alone would never have originated or conceived. It is what the French call *folie imposée*.

Dr. Cramer* has given an account of a family so affected with the delusions of suspicion that they might be termed collectively insane.

In the winter of 1850, there appeared at Soleure, Friedrich Scheurer, his wife, and six grown-up children in a very miserable condition, asking help. They said that they came from Amylie in Savoy, where they had been plundered of their property, and made some passionate though confused accusations against the authorities there. On making inquiry it was found that they were peasant proprietors, and that, for about six months, they had ceased to work upon their land. They shut themselves up in their house and listened to nobody. The neighbours out of compassion had gathered in their harvest. After they had used up or wasted the provisions so stored, they had crossed over to Switzerland. They complained that they had been robbed of everything, that they dared not cultivate their own land, or live in their own house. They stated their faith that the Federal Council at Berne would help them, and reinstate them in all they had lost. This seemed absurd, as the Federal Council had no authority in Savoy, which at that time belonged to the kingdom of Sardinia. Through an arrangement with the commune of Amylie their land was sold, and with 18,000 francs obtained, a house and field were bought for them at Soleure. Two of the younger members left for situations, and one died. The father and mother, two sisters, and the youngest son cultivated the land; but the new property was also sold, probably on the pretext that they did not know how to cultivate it, and they were brought to the village of Grenchen. They now complained more bitterly than ever of having been plundered, and would associate with no one. They refused to accept from the commune anything save the bare necessities

* *Allgemeine Zeitschrift für Psychiatrie*, xxix. Band, 2 Heft.

of life. They lived on bread and milk, used no fire, and washed their clothes without soap in a neighbouring brook. From time to time a deputation of the family went to Berne, to complain of the manner in which they had been treated.

This continued for nine years, during which it appears that none of the family who remained in the house ever tasted warm food. They all persisted in the statement that they had been shamefully treated, and in the delusion that they would obtain justice by going to law. At last the father died of want and cold, during the winter of 1859-60; and a year after the mother perished on the road returning on a chilly winter's night from one of her fruitless expeditions to Berne.

In January, 1862, Dr. Cramer got the remaining members of the family, two sisters and a brother, into the asylum at Rosegg. Force had to be used to remove them. They were brought in a coach to the asylum shouting and wailing, half starved and covered with rags. Dr. Cramer soon saw that the elder sister Maria, now forty years old, completely ruled over her brother and younger sister. She answered for them or told them what they ought to say. The younger sister had a small head, and was decidedly weak-minded. The brother, twenty-eight years of age, was well made, but not very intelligent. In eight months the younger sister had given up the idea that she was an object of persecution, and become a useful servant. The brother, too, left the asylum and got employment, but the eldest sister, Maria, persisted in the same notions which had filled the mind of the mother, and attacked those who disagreed with her with abusive language.

Dr. Cramer believes that the mother and daughter were insane, possessed with an insane delusion, and that they succeeded in impressing this delusion upon the husband and children. One thing seems clear, that the treatment this unfortunate family met with from the local authorities, was more likely to confirm their delusions than to cure them. Had the mother and eldest daughter been separated at an early period, it seems almost certain that the unhappy influence over the rest would have ceased.

The history of religious imposture shows how powerful may be the influence of the insane upon the sane. If disposed to

enlarge on such a subject, we might trace the characteristics of some of the founders of the wild sects that sprang into being during the period of the Reformation, from John of Leyden to Venner. Towards the end of the last century, Mr. Richard Brothers, of whose insanity there can be no question, infected some educated people and many of the vulgar with his claims to be an inspired prophet. Mr. Halhed, a well-known orientalist and member of parliament, was one of his followers. There are people still living who remember Joanna Southcott, who was, when sixty years of age, to give birth to the Messiah, and who was said to have had 100,000 followers. In 1838, John Nicoll Thoms collected a number of followers amongst the ignorant rustics of Kent, and killed a constable who came to apprehend him. After this he persuaded his dupes to face the military, under the assurance that he would make them invulnerable. Thoms killed with a pistol the officer of a detachment which came to arrest him, and was instantly shot dead, with nine of his credulous followers, by the soldiers. It was even believed that he would rise again within a month.

PAPER IX.

UNCONSCIOUS CEREBRATION.

UNCONSCIOUS cerebration is regarded as so important a discovery that two well-known scientific men have contended for the priority of its publication, and while some people are anxious to give it fresh applications and illustrations, others proclaim it to the public as a new demonstration of science, accepted by physiologists, and stable enough to uphold new theories founded upon it. After having carefully considered the evidence upon which the theory of unconscious cerebration is supposed to rest, I am disposed to think that the facts, or assumed facts, may be explained in a simpler manner, and that the theory itself is superfluous and unproved. For an exposition of what is understood by unconscious cerebration, and on what grounds it is believed to exist, I have used a work called, "The Principles of Mental Physiology," by Dr. Carpenter,* the well-known physiologist, who claims to have worked out the theory in his own mind, without knowing that any other had preceded him, and whose recognised reputation is a sufficient guarantee that the argument, in his hands, is sure of being well stated. The term itself seems far from being a happy one. Dr. Carpenter tells us that it has been found readily intelligible; he objects to "unconscious reasoning" as a contradiction in terms, and yet his own description seems either to imply unconscious reasoning, or unfelt feeling; and the difficulty of finding an appropriate term for this class of operations, is really owing to the difficulty of conceiving what these operations really

* I have also used Dr. Carpenter's "Principles of Human Physiology." Fourth Edition. London, 1853.

are. In fact, to state them clearly, is to render the theory incredible. To call thought cerebration, may show the desire of a writer to assign thought as the product of brain action; but it is neither warranted by true philosophy, nor by the popular and scientific uses of speech. When the liver secretes bile, one does not say that it hepatates; or when a man breathes, we do not say he pulmonates.

Dr. Carpenter tells us that he was led into the train of thinking which brought him to formulate his theory by what he calls automatic motion; and it was by doubting the correctness of Dr. Carpenter's explanation of automatic motion that I was led to disbelieve in unconscious cerebration. This explanation may be given in his own words: "As Paley says, 'A child learning to walk is the greatest posture-master in the world.' Yet, when this co-ordination has been once established, the ordinary movements of locomotion, though involving the combined action of almost every muscle in the body, are performed automatically, the Will being only concerned in starting, directing, or checking them. Of this we have familiar experience in the continuance of the act of *walking* whilst the attention is occupied by some 'train of thought' which completely and continuously engrosses it. Though we set out with the intention of proceeding in a certain direction, after a few minutes we may lose all consciousness of where we are, or of whither our legs are carrying us; yet we continue to walk on steadily, and may unexpectedly find ourselves at the end of our journey before we are aware of having done more than commence it. Each individual movement here *suggests* the succeeding one, and the repetition continues, until, the attention having been recalled, the automatic impulse is superseded by the control of the will. Further, the direction of the movement is given by the sense of sight, which so guides the motions of our legs that we do not jostle our fellow-passengers, or run up against lamp-posts; and the same sense directs also their general course along the line that *habit* has rendered most familiar, although at the commencement of our walk we may have intended to take some other." It seems to me that a man who walks along a crowded street must always exercise a certain amount

of attention ; if he is accustomed to do so like a thoroughbred citizen, he can thread his way with much less attention than a man used to walk along quiet country roads, and consequently he is able to divert his thoughts to other subjects as he goes along, to converse with a friend, or to meditate over some difficult problem ; but if the attention to the problem be too profound, the minimum of attention necessary to guide the footsteps is withdrawn, so that he will go on in a straight line without turning round the proper corner, or if the distraction be further increased, he will strike against the passers-by, or perhaps stand still till his attention is again directed to the necessity of attending to his steps. We can understand how a man might perform some simple motion such as flexing or extending his legs by reflex or automatic action ; but that he should walk from one part of a crowded city to another without any exertion of conscious intelligence seems altogether unproved and unproveable.

In what we call absence of mind, the attention is so concentrated upon a single subject or train of thought, that one loses the sense of his present situation which accompanies less intense mental action. Consciousness runs only in one channel, and we wake up as it were from a dream when the concentration is relaxed. The amount of concentration of mind determines the amount and complexity of the physical actions which can be at the same time carried on. The concentration may be so great that the individual can execute no motion whatever ; he is wrapt in a reverie, like Socrates, who stood for a whole day and night in the camp before Potidæa motionless, with his attention completely engrossed with some subject of meditation. In a lesser degree of mental attention the walk becomes slower, or more awkward than usual, or there may be even a double action of the mind ; a train of thought is diligently pursued, while the motions are regulated by a loose association of ideas. Thus, there is a story told of a learned clergyman, very much given to absence of mind, who went upstairs to change his dress previous to going out to dinner. After a while his wife went up to see what had become of him, and found that he had taken off all his clothes, and gone to bed. In this case there

were obviously two trains of thought going on in the mind; one the subject of learned contemplation, and the other the association of ideas which connected the taking off his upper garments with that of going to bed.

Dr. Carpenter talks of men walking by reflex action "being sustained by the successive contacts of our feet with the ground, each exciting the next action"; but it is clear that, without the picture of the street or road present to the conscious mind, walking to any purpose cannot go on, the mere absence of light being sufficient to put an end to it, save in the case of blind persons, who, however, do not walk by reflex action, but depend upon the increased activity and exercise of their other senses. It is difficult to perceive what Dr. Carpenter means by the sense of light guiding the motion of our legs; for indeed sensation can be no guide. It transmits information to the mind, which makes use of it for our guidance, and if the functions of the hemispheres were suspended, and no information transmitted to the mind as to the state of the external world, the process of walking would soon cease, though all true reflex action might continue.

Here it may be noticed that the advocates of unconscious cerebration seem to ground a great many of their arguments upon the assumption that the mind can only attend to one subject at once, and if this be doubted many of their arguments must appear inconclusive. It is generally admitted by metaphysicians, however, that the mind can attend to more than a single object at once. Sir William Hamilton's opinion, which ought to be acceptable to Dr. Carpenter,* is thus given: "You will recollect that I formerly stated that the greater the number of objects among which the attention of the mind is distributed, the feebler and less distinct will be its cognisance of each—*pluribus intentus, minor est ad singula sensus*."

"Consciousness will thus be at its maximum of intensity when attention is concentrated on a single object; and the question comes to be, how many several objects can the mind

* See Sir William Hamilton's "Lectures on Metaphysics," Lecture XIV., vol. i., p. 254.

simultaneously survey, not with vivacity, but without absolute confusion. I find this problem stated, and differently answered by different philosophers, and apparently without a knowledge of each other. By Charles Bonnet the mind is allowed to have a distinct notion of six objects at once; by Abraham Tucker the number is limited to four; while Destutt Tracy again amplifies it to six. The opinion of the first and last of these philosophers appears to me correct."

A man can attend to two simultaneous processes all the more easily if they are different in kind; for example, one can direct a bodily action with a purely intellectual operation more readily than he can attend to two intellectual operations. The human mind requires less attention to intellectual or muscular operations to which it is accustomed, than to those which are new, and therefore difficult, and as the effort is much smaller, the amount of attention or directed consciousness is much less; but to attempt to transmute this diminution of attention into a proof that no attention whatever is required, seems to me precisely the fallacy which underlies the whole of Dr. Carpenter's argument. We know that when a thing is once done it is easier done over again; the oftener we do it the easier; and this is true both of purely mental and of voluntary muscular operations. The easier a thing is done the more ready is the mind to forget the efforts it has made to do it; and again, great rapidity of conscious impressions is accompanied with a very faint memory of these impressions; and thoughts and volition resulting in actions are much less readily remembered than thoughts ending in speech. To such an extent indeed is this true, that some people have actually argued that we cannot think without words. But take for example a man fencing with another. He watches his opponent's point, and his opponent's eye, and executes a series of most complicated and rapid movements of parry and thrust every instant in a different order. He interprets his opponent's thrusts or feints, parries them, and then makes lounges and feints himself. All this requires quick apprehension and thought, yet it is not translated into words. The fencer is conscious, though he is not conscious of being conscious,—that is, he has no time for introspection ✓

or retrospection,—and although he would be conscious of each pass if he only made one, or stopped, or rested his consciousness on the last one which he made, he is totally unable to recall the series of motions which he has gone through; and nothing remains in his memory but one or two of the most striking incidents in the fencing, such as that he has hit his opponent several times, or has been hit himself.

The large field of wordless thought is a subject well worthy of consideration. Not only are there thoughts which die away without being translated into words, there are also thoughts which we habitually confound with sensations,* and thoughts which pass into motions without ever being expressed by symbols. These are extremely numerous, especially in the fields of technical art and action; but to follow up the subject at present would lead us into a digression. It is one of our besetting mental fallacies not only to imagine that thoughts are inseparable from words, but that where there are no words there are also no thoughts. One thing is certain, that words add much to the clearness of our conceptions.

“Thought, too, delivered is the more possessed;
Teaching, we learn, and giving we retain
The births of intellect, when dumb forgot.”—YOUNG.

Thoughts unclothed in words are much less easily made the

* Those who have not already studied the question will find examples of the play of comparison, association, ideal anticipation, judgment, and inference in the use of the senses, in the *Westminster Review* for July, 1872, in an article entitled, “Recent Experiments with the Senses,” and in the works there quoted, especially “Helmholtz’s Handbuch der Physiologischen Optik.” It requires a careful study of optics to learn how much of the mental action enters into our vision of the phenomenal world. As the Reviewer remarks: “If a part of an impression, however elementary it may seem, is sometimes overcome and changed into its opposite, by a mere element of inference or effect of experience, it is clear that it is not the pure result of the nervous stimulation, but depends, in part at least, on further and cerebral processes. In this way, for example, we know that a person’s recognition of a colour is in part an act of inference. The science of optics is full of the most startling illustrations of the displacement of inferences, so rapid and mechanical that they easily appear intuitions to persons ignorant of these facts.”

subjects of introspection and analysis, and fade very rapidly from the memory. The domain of wordless thought is the dim side of our consciousness. In a man's mind, as well as in the outer world, there are processes and objects which he is in the habit of passing over without any attention or analysis, and this habit becomes strengthened the older he gets. A careful introspection of his own wordless thoughts will convince one how numerous they are, and how little he has studied their nature.

In the Eighteenth Lecture on Metaphysics, Sir William distinguishes three degrees of mental latency. The first is defined in the statement that what we know or recollect is not present to our consciousness unless it be recalled at will or start up in a train of association; this every one admits. The second degree exists when the mind contains certain systems of knowledge, or certain habits of action which it is wholly unconscious of possessing in its ordinary state, but which are revealed to consciousness in certain extraordinary exaltations of its powers. This I have no intention of disputing, though I should like rigidly to examine the evidence of some of the illustrations of it, which are copied from one book to another. His third degree seems more capable of dispute. "You are," he says, "of course, aware, in general, that vision is the result of the rays of light reflected from the surface of objects to the eye; a greater number of rays is reflected from a larger surface; if the superficial extent of an object, and, consequently, the number of the rays which it reflects, be diminished beyond a certain limit, the object becomes invisible; and the minimum visible is the smallest expanse which can be seen—which can consciously affect us—which we can be conscious of seeing. This being understood, it is plain that if we divide this minimum visible into parts, neither half can by itself be an object of vision or visual consciousness. They are, severally and apart, to consciousness as zero. But it is evident that each half must, by itself, have produced in us a certain modification, real though unperceived; for as the perceived whole is nothing but the union of the unperceived halves, so the perception—the perceived affection itself of which we are conscious—is only the

sum of two modifications, each of which severally eludes our consciousness. When we look at a distant forest we perceive a certain expanse of green. Of this, as an affection of our organism, we are clearly and distinctly conscious. Now, the expanse of which we are conscious is evidently made up of parts of which we are not conscious. No leaf, perhaps no tree, may be separately visible. But the greenness of the forest is made up of the greenness of the leaves,—that is, the total impression of which we are conscious is made up of an infinitude of small impressions of which we are not conscious.” Hamilton goes on to illustrate his thesis by arguing in a similar manner on hearing and other senses; but this line of reasoning, like many others based on the infinite divisibility of extended objects, is more puzzling than convincing. It does not, in any case, seem to help much the theory of latent ideas. No doubt a thing perceived may be divided into a half, and this half may be too small to be perceived, but there is no such thing as half a perception. Two points singly invisible may by joining together produce a perception; but because the two do so is no proof that one of them modifies insensibly the perceptive faculty, and unless we assume this, the argument stops short of its destined aim, for it is not sufficient to prove that the impression modifies the optical apparatus. An impression which should modify the optic nerve without exciting visual perception is not analogous to latent thought, which, according to Sir William Hamilton, is proved to exist from its effects, but the *minimum visibile* is not perceptible from its effects, and is only discoverable by reasoning on the infinite divisibility of matter. This argument would go to prove that any point, say the million-billionth part of a grain of sand, must modify the perceptive faculty because a million billions of such parts collected together can be seen, and our perception is but the sum of these million-billion parts. An impression which can never be perceived till combined with others, or, perhaps, with a billion of others, is no perception at all. When an adequate force moves a stone, it does not follow that half the force must have an insensible effect upon it. We know that it has none at least in the way of moving it, being counter-

balanced by other forces ; and it is possible that the changes of our sensory organs whereby we recognise outward objects, actually do consist of motions, or modifications of arrangement and position in nerve tissues.

“ In like manner,” says Sir W. Hamilton, “ in the internal perception of a series of mental operations, a certain time, a certain duration, is necessary for the smallest section of continuous energy to which consciousness is competent. Some minimum of time must be admitted as the condition of consciousness ; and, as time is divisible *ad infinitum*, whatever minimum be taken, there must be admitted to be, beyond the cognisance of consciousness, intervals of time in which, if mental agencies be performed, these will be latent to consciousness. If we suppose that the minimum of time to which consciousness can descend be an interval called six, and that six different movements be performed in this interval, these it is evident will appear to consciousness as a simple indivisible point of modified time, precisely as the *minimum visibile* appears as an indivisible point of modified space. And, as in the extended parts of the *minimum visibile* each must determine a certain modification on the percipient subject, seeing that the effect of the whole is only the conjoined effect of its parts ; in like manner the protended parts of each conscious instant—of each distinguishable minimum of time—though themselves beyond the ken of consciousness, must contribute to give the character to the whole mental state, which that instant, that minimum, comprises. This being understood, it is easy to see how we lose the consciousness of the several acts, in the rapid succession of many of our habits and dexterities. At first, and before the habit is acquired, every act is slow, and we are conscious of the effort of deliberation, choice, and volition ; by degrees the mind proceeds with less vacillation and uncertainty ; at length the acts become secure and precise : in proportion as this takes place, the velocity of the procedure is increased ; and as this acceleration rises, the individual acts become secure and precise : in proportion as this takes place, the velocity of the procedure is increased, and as this acceleration rises, the individual acts drop one by one from consciousness, as we

lose the leaves in retiring farther and farther from the tree ; and, at last, we are only aware of the general state which results from these unconscious operations, as we can at last only perceive the greenness which results from the unperceived leaves."

The relation of objects of sense to space, and of thoughts to time, so beautifully expressed by Sir William Hamilton, forms a pleasing antithesis till we remember that sensory impressions, as well as thoughts, have a certain relation to time ; for example, a coloured object rapidly flashed before the eye does not produce a distinct impression. The fallacy of the argument seems to me to be in supposing that the attribute of consciousness is not infinitely divisible, along with the thought which it accompanies. The protended parts of each *conscious* instant must be divided into an infinity of *unconscious* parts. Thus consciousness is not the concomitant of such mental operations as go on very rapidly, but stands to these operations in the same relation as the eye does to minute objects. Surely this is something very like the raising of consciousness into a separate faculty. In any case, this philosopher assumes that consciousness is of slower operation than muscular contractions. The discs of a muscle can contract many times ere consciousness derives a distinct impression from their contractions. This may be fairly disputed. The quickness of thought is as great as that of muscular motion. Music is often given as an instance of work done under the influence of unconscious cerebration, and yet it may be held that the mind perceives the execution of a tune as quickly as the muscles can play it. I have heard it said that the conductor of an orchestra can detect a false note from a particular instrument, amongst the great variety of sounds in a brass band. Altogether Sir W. Hamilton's argument appears to me of the same character as that of the Eleatic Zeno upon motion, but not so successfully conducted.

What is perhaps the best of Sir William Hamilton's arguments is taken from an assumed violation of what he calls the law of association. One idea suggests another ; and the second idea usually suggests a third ; but sometimes

this series is broken up: usually A suggests B; and B, C; but sometimes A suggests C alone. In that case, observes Sir William, B was unconsciously present to the mind; A in reality did not bring C to consciousness; it was the B of which the mind was not conscious that did so. If you do not assume this, the "laws of association" are violated. An opponent might, however, make a stand on the matter of fact, and reply, "You say that A can only suggest B, and B, C, but I give you an instance where A can suggest C." If this instance be deceptive, why may not every other be so? And to make a finer point. How do you know that A suggests B? Perhaps it suggests something else which suggests B. At anyrate, here are two laws; in the first case one conscious idea is associated with a second, to call into consciousness a third; in the second we have two conscious ideas apparently associated and in precisely the same way, and yet you insist in putting in between them something entirely different, unless you hold that not being an object of consciousness makes no difference.

As for the laws of association, as they are called, it would be agreeable to know what they are. It cannot be affirmed that one idea naturally and invariably suggests another; in any case, the exceptions are very numerous; indeed, the obliteration of links of association is one of the most common of the educational processes through which we pass. For example, we have learned to speak by a slow process of associating our conceptions with certain recognised symbols; between these symbols and the conceptions themselves there were a number of associated ideas taken up in the process of instruction long ago faded from our memory, but which we know must have existed and did exist. At last the word is so closely associated with the thing, and the thing with the word, that it is only by a careful process of thought that we know that the idea actually exists without the word. By using these associated symbols I may learn a set of other ones—that is, a new language,—and though at first I may be obliged to go over the words of my own language, and translate them into another, in the end I can so familiarise myself with a foreign one as to drop the old words, that is, the old

links of association, and think in a new language. Moreover, the laws or train of associations are so variable that we do not hold ourselves compelled to explain its anomalies. Of all mental processes association appears to us the most inexplicable. With this proviso it may be held that the explanation that an intervening link of association is momentarily present to the mind and then forgotten, does not seem to us so unreasonable. Is this kind of forgetfulness not the most common of all things? A thousand ideas and representations rise into the mind, present themselves to consciousness, and unless the mind pay special attention to them, for some special reason or other they disappear from memory without leaving any trace behind, and sometimes they do so, if not instantly, at least within a very short period of time. Were it not for this forgetfulness one could recall every occurrence of his past life day by day. It is true, circumstances which we imagine we have forgotten sometimes again rise in the memory, but this does not gainsay the general truth that many things, both mental and bodily, of which we were once conscious, are to all appearance totally forgotten, and it is precisely those operations which we are most ready to forget on which the theory of unconscious cerebration seems to rest. Why then should it appear so incredible that the memory of the consciousness should cease in a very short time, especially when the impression was not vivid, consciousness faint, and the sequence of ideas rapid or distracted?

It may not be out of place here to notice that Sir William Hamilton held the view that consciousness was maintained even during sleep. He believed sleep to be a series of isolated acts of consciousness, which, unless under some unusual circumstances we forget on awaking. This makes it all the more strange that he should favour a hypothesis by which waking thoughts are stripped of the accompaniments of consciousness, rather than admit that consciousness could be separated from memory.

Sometimes we forget one part of an action or mental process, and sometimes another, and this partial oblivion has been the source of illusions. A man may have learned

something, and retaining what he has learned, may forget when and where he has learned it, so that his knowledge, being revived in his mind by some sudden association, he is doubtful whether it is not a new creation of the mind or an effort of the imagination, so easily and rapidly comes the evolution of his stored-up knowledge. Dr. Laycock, in his interesting "Chapter on some Organic Laws of Memory" in the *Journal of Mental Science*,* has given some instances where authors had forgotten what they had themselves written, and read their own productions with great pleasure; and no doubt an author is extremely well adapted to admire his own works, for no one else could be expected to occupy so exactly the same standpoint.

It happens to all of us that on finding ourselves in a certain situation, or on viewing a landscape or some other scene for the first time, we have a vivid impression that we have been in the same position or witnessed the same scene before; and it is very likely that we have seen something closely similar, or have read or dreamed of something like what we are going through, and that we recognise the resemblance without remembering when, where, or how we have seen the thing similar, and thus are led into the belief that we have seen something the same. Occasionally by rigid mental scrutiny we are enabled to recall the circumstances under which the previous occurrence had taken place, and thus, as it were, lay bare the machinery of the illusion which was used by the Pythagoreans as an argument for the transmigration of souls.

The following are instances of ideas presented to consciousness, and very quickly forgotten. Sometimes the will is exerted to apprehend impressions from the senses and secure the result; for example, if a clock were to strike three or four, we might suddenly call our mind to note the number of sounds so as to learn what o'clock it was; and we have the impression on our mind that we must do so quickly, or else all consciousness of the number of strokes will pass away, and we shall remember nothing.

* July, 1875.

The usual address of one of my friends on meeting me was: "Oh, what was I going to say?" At one time or another we have a remark or train of remarks as it were trembling on our lips, when in an instant it is forgotten, sometimes to be recalled in a minute, sometimes not again to return to memory.

Again, I have noticed that when I look up a foreign word in a dictionary with my attention wandering on something else, I return to the text which I was reading without either knowing the meaning of the word or being sure that I have looked it up; but on again looking it up, I at once recognise the different meanings given in the dictionary, and feel sure that they were in my mind a few seconds before. Observations such as these, which are, I suppose, common to us all, ought to make one cautious against being positive that we must remember what we were conscious of the minute before.

Moreover, the condition of somnambulism affords proof that memory can be separated from consciousness, for somnambulism, as Sir William Hamilton has himself stated, has consciousness without memory for its characteristic. This being so, it is very strange that some should have represented the analogous state of mesmerism as an instance of unconscious cerebration. A man acting in a mesmeric state is conscious of what he does, but unconscious of the antecedent and surrounding circumstances in which he is placed.* The will is suspended, and the thoughts of the

* Dr. Laycock in his learned work, "Mind and Brain," Edinburgh, 1860, vol. ii., p. 101, gives an explanation of those processes which I am ready to accept, save that the words "thought ceases" might convey an erroneous impression. "The best illustrations," writes Dr. Laycock, "of this kind are afforded by the phenomena of sleep and somnambulism, and by those manifested under the influence of alcohol, opium, chloroform, hachisch, and other nervine irritants and anæsthetics. During the waking conscious state, all the external senses instinctively co-operate in verification without the knowledge of the individual, and so place him in fitting relation with the external world. When they cease to transmit impressions unitedly, from changes in the co-ordinating sensory ganglia, unconsciousness begins to approach; and when the senses are at last shut up, so that no affinitive impressions reach the ideagenic tissue, sensation, perception, and thought cease, and all verification ends. If, however, the impressions reach the tissue, and are not co-ordinated, then

mesmerised person follow a train of association which may be guided by another, but he is conscious of this train of association, and his attention is indeed very strongly directed towards certain objects to the exclusion of others; and what is attention but concentrated consciousness?

The mesmeric state is somewhat akin to reverie, and still more so to somnambulism. In the *Chicago Journal of Mental and Nervous Disease*,* there is a translation of a paper by Dr. E. Mesnet, on "The Automatism of Memory and Association in Pathological Somnambulism." It contains a remarkable series of observations on a soldier wounded in the head in one of the battles preceding Sedan. After recovering from paralysis of the right half of the body, which continued for a year, this man occasionally fell into states of somnambulism. The observations of Dr. Mesnet are of great interest, though his conclusions are sometimes questionable. It is likely that some may regard this case as a living example of unconscious cerebration.

"The transition from health to illness," we are told, "is accomplished with rapidity; in a few minutes, insensibly, without convulsions, without cry, *he changes from one to the other without experiencing those fading tints of light and reason which we find at the hour when sleep approaches, and he who is conscious, responsible, and in full control of himself, an instant later is only a blind mechanism, an automaton, obeying the unconscious activity of his brain.* He moves with an appearance of freedom which he does not really possess; he seems to exercise his will, and yet he has only an unconscious volition which is powerless to remove the slightest obstacle opposed to his movements."

Dr. Mesnet found that while, in this condition, the general sensibility was extinguished; hearing, smell, and taste were

false thoughts will arise; for while there is no correct knowledge of the external world, the impressions themselves excite ideagenic changes. These result either in somnambulistic or delirious acts and thoughts. Chloroform sometimes develops this state of somnambulistic activity, and the world of dreaming becomes a world of reality to the individual."

* January, 1875. Translated from "L'Union Médicale," July 21 and 23, 1874, by F. G. Huse, M.D.

sealed against any impressions from without, and sight yielded only vague ideas ; while the sense of touch persisted, and seemed to acquire delicacy and an exaggerated impressibility. The muscular sensibility, if it be distinguished from touch, seemed also to be preserved. In walking about and acting during these states, the man only used the sense of touch as a connection with the outer world ; but then a man who feels touch is conscious. Feeling is merely a phase of consciousness. By means of this sense observers were enabled to suggest trains of association in his mind, to arouse ideas which were the beginning of hallucinations under which he acted ; but then these associations, these hallucinations, implied consciousness, though a consciousness limited to one sense, to a train of associations apparently not under the control of the will, and to certain pictures floating before the mind. Any one who reads the very interesting description of this man's state will be forced to admit that there is no proof, and indeed proof to the contrary, that the man was unconscious.

As is usual in such cases, the man entirely forgot, on returning into his normal state, what he had done during his somnambulism. That consciousness exists in sleep-walking is proved by the possibility of remembering in a subsequent condition what had occurred during a preceding one. Passing over in oblivion the interval of his ordinary waking state, the memory of the sleep-walker takes him back to the last act of somnambulism. The demonstration of this condition of alternate consciousness is perhaps the most interesting and valuable addition to our knowledge of mental operations afforded to us by the observations of physicians.

One might receive what Leibnitz* and Sir W. Hamilton

* See "Nouveaux Essais sur l'Entendement Humain," Liv. ii., chap. 1. This work was written to oppose the arguments of Locke, in his "Essay on the Human Understanding," against innate ideas. In the dialogue, Theophile, who evidently upholds Leibnitz's own views on this question, thinks that there is always an exact correspondence between the body and the immaterial soul, and that, as some motions of the body such as those of the viscera go on without being perceived, some of the operations of the mind do the same. As he holds that the mind always thinks, he is led to believe that some of its thoughts do not appear in consciousness. Theophile advances that it is a *petitio principii* to believe that there is nothing in the

have written about latent thought without admitting the extensions which Dr. Carpenter has given to the theory. It is somewhat difficult to make out what that learned physiologist really holds, for it is possible he may not entirely agree with the quotations which he makes from various authors, who certainly do not agree with each other; but it would seem that Dr. Carpenter's own view amounts to this: That there is a principle or order which sometimes arranges our ideas in a more regular or orderly posture than we could have placed them with all our skill and industry; all the while we are not conscious of this process, but may be thinking of something else. In short, two processes of thought may go on, if not within the mind, at least within the cerebrum; and of one of these processes we are conscious, and of the other not conscious, so that when one asserts that he is not thinking of a thing, he may be quite mistaken. When a man is composing a poem or story, or classifying objects in zoology, or working out a problem in algebra, he may think it or he may cerebrate it; he may work it out in his waking moments with toil and care, or he may cerebrate it in his sleep, and find the difficulty solved in the morning.

Dr. Carpenter, however, believes that unconscious cerebation is really due to unrecognised changes in the substance of the brain; thus he hesitates to call them mental changes at all. Here, as Sir Henry Holland has remarked, this hypothesis "supposes intellectual operations in which consciousness has no part, but which, nevertheless, evolve true logical results. Here we are called on to recognise an *exclusion* of mind from the highest functions of mind." Dr. Carpenter's view is the same as that which Sir William Hamilton calls the mechanical theory—that the whole process is effected without either volition or even any action of the thinking principle, it being merely automatic or mechanical. "This opinion," he continues, "is unphilosophical, because, in the first place, it

soul which it does not perceive. He talks of small perceptions which are not perceived, but which nevertheless influence our undeliberated actions (actions indeliberées). I have no time to analyse these views. At anyrate, unconscious cerebation, as understood by Dr. Carpenter and his followers, derives no real countenance from the great name of Leibnitz.

assumes an occult and incomprehensible principle, to enable us to comprehend the effect. In the second place, admitting the agency of the mind in accomplishing the series of movements before the habit or dexterity is formed, it afterwards takes it out of the hands of the mind, in order to bestow it upon another agent. This hypothesis thus violates the two great laws of philosophising—to assume no occult principle without necessity—to assume no second principle without necessity.”*

Rather than admit Dr. Carpenter’s explanation thus repudiated by one whom he claims as an ally, we might be tempted to take up the old theory of inspiration, of new ideas being put into the mind by another spirit in some unknown way. I already admit the existence of other minds besides my own, and I am more disposed to believe that they might communicate their thoughts to me than that my mind could be unconsciously composing poetry while I imagine myself studying science.†

It is quite true that after long puzzling ourselves to see the true relations of things, it now and then happens that they suddenly, as it were, present themselves to our mind, and the difficulty is at once solved, like a whole landscape seen by a flash of lightning; but this affords no proof that we have been working at it unconsciously, it merely shows that the mind is sometimes more rapid and powerful in its operations than at others. Occasionally, as in recollecting where we put lost objects, it is owing to an idea crossing our mind which lights up a lost train of associations. As well might the wearied marksman whose shoulder is sore, and whose gun trembles in his hand so that he shoots wide of the mark, but

* Sir William Hamilton’s Lectures on Metaphysics, vol. i., p. 368.

† Dr. Carpenter gives in another place what might be a third solution of the question—of which, however, I have no intention of availing myself: “Looking at nerve force,” he says, “as a special form of physical energy, it may be deemed not altogether incredible that it should exert itself from a distance, so as to bring the brain of one person into direct dynamical communication with that of another, without the intermediation either of verbal language or of movements of expression. A large amount of evidence, sifted with the utmost care, would be needed to establish even a *probability* of such communication, but would any man of science have a right to say that it is *impossible*?”

who finds next morning that he can hit the centre—as well might he conclude that he had been unconsciously practising in his sleep. He, too, has his flashes of inspiration; on a certain moment he feels that the muscular adjustment and visual adaptation are complete, and that he has made a correct aim. This he may repeat once or twice, or he may totally fail to do it again for days afterwards, but, like the poet or mathematician, he has times when the results are happier. Our views are confirmed by considering attentively the nature of these sudden flashes of inspiration; they show us the true relation of things by which we can work out problems and gain results; but they do not give us the *results* themselves.

To take an easy example: we do not see how to state a question in arithmetic correctly, and after puzzling our brains for a while we give it up; suddenly our thoughts return, and we see at once how to state it. But in the instances usually given we have to work out the question, we never awake with the answer. Even suppose we did so, it would not be conclusively proved that we had worked it out unconsciously; we might have done it like the gentleman mentioned by Dr. Carpenter, who worked out an algebraic sum which had long puzzled him, obtained the desired result and wrote it down, but forgot all about it until he found the scrap of paper upon which he had worked it.

These flashes of inspiration do not necessarily occur after a given interval of time during which unconscious cerebration is assumed to have been at work. They may occur in the course of one sustained effort of thought, the whole relation of things becoming suddenly clear; or they may occur in the heat of an improvised debate. In truth, the manner of their occurrence determines in a great degree the intellectual character and capacity for various pursuits. Thus the orator and the improvisatore seize upon the relations of a subject quicker than the ordinary writer of poetry or leading articles. There are two ways of writing a book, as Dr. Johnson remarked: to wait for the inspiration, or to sit down doggedly to it. I always suspected that the first method of working was rather a proof of mental weakness than of mental power, and that the great masters of thought

or imagination could work on rapidly, easily, and with fewer checks than those who had to wait for ideas, who easily got tired of a difficult subject, and had to put it away till the mind was refreshed. I have no intention of going through all Dr. Carpenter's instances and anecdotes; but I doubt not all those that are authentic could be explained in an easy manner, without leaving room for his principle of unconscious cerebration.

The difference between ourselves and our opponents, however, is not solely a difference in explanation. They are in the habit of stating facts in a way which is only consistent with their theory; for example, Sir William Hamilton says: "Now, all of you must have experienced, if ever under the necessity of reading aloud, that if the matter be uninteresting, your thoughts, while you are going on in the performance of your task, are wholly abstracted from the book and its subject, and you are perhaps deeply occupied in a train of serious meditation. Here the process of reading is performed without interruption, and with the most punctual accuracy; and, at the same time, the process of meditation is carried on without distraction or fatigue." Now, so far from a person being able to read a book aloud and think on something else without distraction and fatigue, I believe when this is done that it is really accompanied both by distraction and fatigue, that no train of severe and difficult thought can be carried on in this way, and that, though the mind may wander through a series of associations, yet a minimum of attention must always be kept up to the reading. The mind is still conscious of the printed page, and if the words were ill-spelt or a word were to be repeated twice or thrice, or any very startling expression used, the diminished attention would at once be increased; and how could this be if no consciousness had remained? The easier the reading the more conscious are we of the ideas; the more difficult the reading the fainter becomes the grasp of the ideas, so that we are occasionally obliged (as in deciphering a difficult MS.) to read a sentence twice over, once for the words, and once for the sense. In reading aloud with the mind wandering on something else, we only read for the words; each word is recognised, but not their collective meaning. As has been

already said, much of the difficulty has been created by the assumption that we cannot attend to more than one mental process at the same time.

There is a great similarity between physical processes which are readily forgotten and mental ones, so that if we affirm unconscious cerebration of the one we are obliged in consistency to do so of the other. In this way Dr. Carpenter, who is much less wary than Sir William Hamilton, carries his views so far as to render the whole theory suspicious.

Perhaps he nowhere exposes the weakness of his position more than in the following statement.* "So an expert calculator, who may have originally had no more than an ordinary facility in apprehending the relations of numbers, casting his eye rapidly from the bottom to the top of a column of figures, will name the total without any conscious appreciation of the value of each individual figure; having acquired by practice somewhat of that *immediate insight*, which is so remarkable a form of intuition in certain rare cases. It is certain that a distinct ideational state must have been *originally* called up by the sight of each individual figure; and yet an impression made by it upon the cerebrum, which does not produce any *conscious* recognition of its numerical value, comes to be adequate for the evolution of the result." It certainly is a bold statement to say that a man can add up a column of figures without the mind being conscious of any of them. Common-sense would surely reply, that if the accountant were unconscious of even one of the figures, he would not add it up along with the rest, and his addition would thus be incorrect. It is true an accountant in adding up a long column of figures has his attention so occupied with the sum which is growing in his mind that at the end of the process he has totally forgotten the separate cyphers which make up the addition, but this forgetfulness is no proof that a momentary consciousness did not exist—if he were stopped for a moment, and asked what was the last figure, he would probably answer correctly, unless the cohesion of his ideas were scattered by the abrupt-

* *Op. cit.*, p. 529.

ness of the question. The truth is, if one were to add up a long column of figures and dwell for a short while on each of them so as to ensure that he was fully conscious of their numerical value, and if after he had completed the addition and written it down, he were asked to repeat the column of figures, the mind of the man, after adding the columns thus slowly, would be in very much the same condition as if he had added them quickly; he would be totally unable to recall the column of figures in both cases. But Dr. Carpenter would say, that in the one case the accountant could not repeat the column of figures because he had forgotten them, and that he did not know the other column of figures because he had been unconscious of their numerical value, and that, though it was a reasonable explanation to say that the column which he had added slowly had faded from his memory, it was incredible that the one he added quickly should have done so. A similar argument has been happily stated by Dugald Stewart.* "Thus, in the case of a performer on the harpsichord, I apprehend that there is an act of the will preceding every motion of every finger, although he may not be able to recollect these volitions afterwards, and although he may, during the time of his performance, be employed in carrying on a separate train of thought. For it must be remarked, that the most rapid performer can, when he pleases, play so slowly as to be able to attend to, and to recollect, every separate act of his will in the various movements of his fingers; and he can gradually accelerate the rate of his execution till he is unable to recollect these acts. Now, in this instance, one of two suppositions must be made. The one is, that the operations in the two cases are carried on precisely in the same manner, and differ only in the degree of rapidity; and that when this rapidity exceeds a certain rate the acts of the will are too momentary to leave any impression on the memory. The other is, that when the rapidity exceeds a certain rate the operation is taken entirely out of our hands, and is carried on by some unknown power, of the nature of which we are

* Sir William Hamilton's "Lectures on Metaphysics," vol. i., p. 357.

as ignorant as of the cause of the circulation of the blood, or of the motion of the intestines. The last supposition seems to me to be somewhat similar to that of a man who should maintain that, although a body projected with a moderate velocity is seen to pass through all the intermediate spaces in moving from one place to another, yet we are not entitled to conclude that this happens when the body moves so quickly as to become invisible to the eye. The former supposition is supported by the analogy of many other facts in our constitution. Of some of these I have already taken notice, and it would be easy to add to the number. An expert accountant, for example, can sum up almost with a glance of his eye a long column of figures. He can tell the sum with unerring certainty, while at the same time he is unable to recollect any one of the figures of which that sum is composed; and yet nobody doubts that each of these figures has passed through his mind, or supposes that, when the rapidity of the process becomes so great that he is unable to recollect the various steps of it, he obtains the result by a sort of inspiration."

Dugald Stewart evidently had no foreboding of the existence of Dr. Carpenter; but it is not clear how the consciousness of the accountant could be granted and the theory of unconscious cerebration be still used to explain operations which are generally assigned to it.

Dr. Carpenter's work has been selected for criticism, as he is the most popularly known advocate of the theory, and, though it would take too much room to go over all his illustrations, those selected are believed to be the strongest supports of his position. Any one who reads his book will perceive that he is somewhat ready to admit the truth of an anecdote when it favours his own views, and the following may serve as an instance: "It is a remarkable confirmation of this view," he observes, "that ideas which have passed out of the conscious memory sometimes express themselves in *voluntary muscular movements*, to the great surprise of the individual exercising them." So far from thinking this statement a confirmation of any view, most people will think that it requires itself to be confirmed, and their mistrust will,

perhaps, not be lessened when they find that Dr. Carpenter has to appeal to the spirit-rappers for assistance. "True answers," he writes, "are often given to questions as to matters of fact, notwithstanding that there may be either entire ignorance, proceeding from complete forgetfulness of those facts, or absolute disbelief in the statement of them." Thus, a man may unconsciously know what he consciously disbelieves, and record his knowledge by kicking on the table. Dr. Carpenter gives some instances of this from the Rev. Mr. Dibdin's lecture on table-turning, in which the number of years the Queen had reigned, and the age of the Prince of Wales, were indicated by taps on the table, though no one present knew the number of years in either case. The number of tailors sewing in a neighbouring room was given by three taps and two gentle rises, the taps being for three full-grown tailors, and the rises for two boys. This is a famous way of disposing of the spiritualists. It is in vain that they will insist that they learn from spirits things that they did not know before. Dr. Carpenter will show them that they have a fund of unconscious knowledge which they never dreamt of, and which they display in a manner they never intended. But, seriously, we cannot think that Dr. Carpenter's explanation will be received as sufficient to account for the facts stated by spiritualists, if these facts be admitted at all.

The Rev. W. G. Davies, in a thoughtful paper upon "Consciousness and Unconscious Cerebration,"* has the following passage :—

"When we are at a loss for a name, and make every effort to recall it, but unsuccessfully, and that name afterwards spontaneously flashes into consciousness, such an event can be satisfactorily accounted for by the great physiological law of production to which reference has been already made. The disintegrating activity involved in hunting for the name has made an increased demand upon the nutritive process or production, extra force has been generated, this flashes out of latency into consciousness, and lo! the missing name. If 'Unconscious Cerebration,' in the sense of

* *Journal of Mental Science*, July, 1873.

expenditure, is made to account for the fact that the schoolboy who can just manage with great effort to repeat fifty lines of Virgil before retiring to rest, can repeat them fluently in the morning, we are placed in this difficulty, namely, how to make a cask from which the water runs out as fast as it runs in, fuller in the morning than it was the previous night. So intelligent a man and so able a physiologist as Dr. Carpenter must see the reasonableness of what we are here urging if he has not done so already, only he is so hampered by an untenable hypothesis that he does not clearly state whether by 'Unconscious Cerebration' he does not mean both integrating and disintegrating mental processes. Let him, therefore, ponder well over the fact that the integrating process is invariably preparatory to the display of consciousness, that the disintegrating process never takes place without such display."

For my part, I am neither satisfied with this explanation of the reverend gentleman, nor able to suggest another one. There are anomalies in memory and association which will possibly always remain mysterious. The condition which is required to allow for the play of Mr. Davies' explanation is, that there should be an increased amount of brain work in the effort to recall the lost name; but, then, the name may be recalled, or return, to the mind without any such effort being made; at least, the effort may be only momentary. A man may not think it worth his while to take any trouble to recall the lost name, and yet it may appear to consciousness the minute after, five minutes after, a week after; and this without any search demanding or allowing the nutritive processes which generate extra force.

The recovery of lost names can be explained to a certain extent by the mental process of association, but not by "the integrating and disintegrating mental processes." It may be that a schoolboy who can say his lesson more readily in the morning than on the evening before is aided by the fresher state of his brain; but we do not see that "the fact" upon which Dr. Carpenter is asked to ponder well, has been established on scientific evidence. How do we know, for example, that "the disintegrating process" never takes place without a display of consciousness? Is there never any disintegration of the tissues of the brain without consciousness? Or

may not consciousness * accompany the integration of the tissues? We can infer, from certain changes and reactions in the blood, that mental exertion is followed by waste of the tissues of the brain, and that this waste is proportioned to the amount of work, but what are the order and succession of changes which go on in the nerve cells, or nerve fibres, during thought is, as yet, unknown to us. When we can detect a desire with a chemical reagent, and when we can see an abstract idea through the microscope, we shall, perhaps, have a true physiology of the mind.

In any case, the theory of unconscious cerebration derives no support from physiology. It is a child of the old metaphysics, to be brought forward and repelled by the study and analysis of mental operations, cognisable by internal self-examination.

I am not sure what amount of credit is still attached to Dr. Carpenter's theory of unconscious cerebration. It is not mentioned at all in some text-books of physiology, and I have been told that some distinguished lecturers on that science never allude to it. When the preceding essay was written a belief in unconscious cerebration was not unfrequent amongst medical psychologists, and may be so still. The examination of the question led to some trains of thought which seemed of interest to pursue, hence I thought it best to reprint the paper.

The essay which appeared in the *Journal of Mental Science* for October, 1875, was written in Glenlochy, where I had only two books bearing on the subject with me. Had I possessed J. Stuart Mill's "Examination of Sir William Hamilton's Philosophy," I might have taken less trouble in examining Sir William's speculations, and only commented on those of Dr. Carpenter. Literature now-a-days is so wide that a man may never have heard of what has been printed against his writings. A criticism may never circulate in the same directions as the works it aims at. It is often more difficult to reach a bubble than to break it. Hence it shows a certain kind of discretion to affect to ignore an attack rather than to reply. I have therefore reason to be obliged to the

distinguished Professor of Medicine in the University of Edinburgh that, on reading the paper, he at once sent word to me that he was going to discuss the question at the next meeting of the Medico-Psychological Association at Edinburgh. Dr. Laycock has since passed away beyond all worldly controversy, leaving a well-merited reputation. As to me he was always friendly and courteous, truth is my sole warrant for making the observation that controversy was not his strong point. Having confidence in his own insight, which was often clear and original, the Professor never paid much attention to objections, but went on following his own lines without being diverted by the arguments of his adversaries, or treating them as "difficulties" which, whether solved or not, little affected the main question. On the matter in dispute he scarcely came my way. His discourse, which was not read in whole, will be found in the *Journal of Mental Science*.*

One of the reasons why I paid more attention to the expositions of the theory made by Dr. Carpenter, was that Dr. Laycock had mixed up his views on unconscious cerebration with his theory of reflex cerebral function. Nevertheless there was no necessary connection between the two. Reflex cerebral action as defined by Dr. Laycock, might take place and be attended with consciousness. What is called automatic action does not necessarily imply the absence of consciousness. A cough is automatic; but we may be quite conscious both of coughing and the feeling which caused the cough. The terms consciousness and automatism are terms which in medical treatises are used with various meanings, sometimes by the same authors on different pages. Though I cannot define consciousness, I can surely make the reader understand what I mean by being conscious. I feel, I touch, I smell, I hear, I see, I desire, I love, I suffer, I fear, I hope, I think, I imagine, I will: all this means that I am conscious.

As consciousness goes with sensation it precedes the intel-

* "Reflex, Automatic, and Unconscious Cerebration: A History and a Criticism," by Thomas Laycock, M.D., &c., *Journal of Mental Science*, January and April, 1876. The report of the discussion is in the April number, p. 157.

lect. The infant who* feels hunger, who cries when pricked, is conscious. The man who has fallen down in a fit of apoplexy, but moans or shrinks when pinched, has not entirely lost consciousness, for he is still conscious of painful impressions. Were a man reduced to one sense, like Condillac's statue, he would still be conscious. Were all his senses abstracted, his thoughts and memories remaining, he would still possess consciousness.

Perhaps consciousness is coexistent with life. If science reply: "This is but a guess," at any rate it can put in no denial. Alone in a forest, amidst the universal laugh of the spring, thinking of all the countless activities of nature, all the silent but unceasing business of organisation, the swell and pulse of life awakened from the dreamy melancholy of winter, when the sunlight touches the branches, and the sap ascends and each atom faultlessly goes through every turn in the dance of attraction and affinity, one quietly yields to the belief that enjoyment is all around.*

"'Tis my faith that every flower
Enjoys the air it breathes."

WORDSWORTH.

The trees have no introspective consciousness; but they feel that it is warm, that it is bright. To them there is a difference when the rain falls, and the cloud passes by, and when the storm strains every fibre in branch and stem. They are in a different mood during the night than when the rising sun quickens all the processes of life.

It seems to me much less questionable that the lowest grades of animals—the protozoa—have sensation, and are therefore conscious. They have no nerve cells, but this probably means that feeling, which in higher structures is specialised in the nerve cells, is diffused throughout their organism; and as in these creatures all or most of the cells that make up their bodies digest and secrete, so all share in a vague and dim consciousness.

* The argument is well stated by my friend Dr. W. Lauder Lindsay, who was both an able psychologist and one of the first botanists in Scotland. See his essay, "Mind in Plants," *Journal of Mental Science*, January, 1876.

Medical writers of good reputation talk of a sleep-walker being unconscious. Having already considered this question, it may suffice to say that, in somnambulism and the active stage of hypnotism or mesmerism, consciousness is the one thing which is never suspended. Rather might they be called states of concentrated consciousness, consciousness brought to a focus instead of being diffused. Sometimes the mental condition in hypnotism is obscure and perplexing. In a woman of unsound mind who was hypnotised, Dr. Auguste Voisin* found that he could suggest different actions during the hypnotic state which she was to do on waking or a certain number of hours after. Thus, it was suggested to her to take a hidden bottle of wine which was intended for her, to count up to ten, to carry something to a companion, to write a letter or wash out a parlour. In these instances the young woman forgot the reasons why she was to do a certain thing, or the orders given to her to do it, but remembered that she had to do it. She remembered her resolution, but forgot when and how it had been formed.

Cases like these remind us of Mr. Samuel Butler's theory that instinct in animals is a form of transmitted memory.

One law runs through all nerve action. It is the changes that are noticed. "Consciousness is proportioned to change, and fades with invariability of impression."† In perceiving heat, light, electricity in the perceptions of all the senses we must have change, interruption, and contrast. In thought, when the effort is lessened, consciousness is also lessened; desire is the result of the want of balance between our wants and their satisfaction; when there is little or no change in our condition, memory is dull and fleeting.

I imagine that this explains what Buddha meant by Nirvana. Sankya Muni, who was a profound metaphysician, discerned the same difficulty which Hegel had in distinguishing between being and nothing. When the soul has got rid of all desires and escaped the changes and transmigrations of life, it passes into *nirvana*. This was so like unconsciousness

* See the *Annales Medico-Psychologiques*, Septembre, 1884.

† The evolution of consciousness in the animal kingdom is well treated in Dr. Clevenger's "Comparative Physiology and Psychology," Chicago, 1885, chapter xii. This is a very able and thoughtful book.

or nothingness that it might readily be mistaken for annihilation ; but those who had entered into *nirvana* might again come out of it. In an unchanging state, there being no difference between the past and the present, memory is useless ; and as the future is not to differ from the past, there is no room for anticipation. There is no desire, no hope, no comparison. In this state consciousness would be but the iteration of an eternal I am as I was ; as I was I shall be. Of such a state no living man has any experience. We are ceaselessly struggling to adjust ourselves to the changes in the world within and without, which will in the end break up the harmony of our organism. A changeless state can only be to a being who is beyond the influence of things without, or who includes and controls all things.

There are still some difficult questions surrounding this subject, which cannot at present be examined. J. Stuart Mill's remarks about unconscious modifications of the nerves show a true insight. No doubt there are organic changes in the body in general, or in the brain, which modify and influence the tone of thought. It is of extreme interest to watch these changes exciting vague feelings and affecting the disposition and character. A careful study and scrupulous analysis of such states might lead to some new light in psychology.

PAPER X.

THOUGHT WITHOUT WORDS AND THE RELATION OF WORDS TO THOUGHT.

PART I.—ON WORDLESS THOUGHT.

THE object of this essay is to inquire how far thought can go on without language, and what is the nature of its association with words, or other symbolic means of expressing or communicating ideas.

In studying these questions much may be learned from what has been observed both in the normal and deranged states of mental activity.

It is scarcely needful to remark that in the lower animals the use of the senses and the muscular apparatus come into play sooner than in man ; in many cases shortly after birth.

Those actions which are performed without any preliminary training or rehearsal, are called instinctive, and are believed to be dependent upon the reflex activity of the spinal cord. For example, almost all mammalia can swim ; if put into the water they do so at once (we may say instinctively, if content with that species of information which is furnished by a word), but, at any rate, when thrown into the water, motions are excited which paddle them along. There is, however, no instance, as far as I am aware, of a man being known to swim without being taught, or at least teaching himself, and when a man who cannot swim falls into the water, instead of striking out like a dog or a blind kitten, he almost always throws up his hands in the air, which is the very thing he ought not to do, apparently under the idea that his hands should be ready to catch something. It is not apparent what advantage man can have gained in the "struggle for existence" in losing the power of swimming without being taught.

At anyrate such reflex actions are rare in the human being. Sucking and swallowing are the most important, and are needful to sustain life in the new-born child. The use of the senses and of the motor apparatus has, in the human infant, to be learned by the action of the mind. The exercise of the mind probably commences from birth with an involuntary analysis of sensations. At first these sensations probably appear as mere modifications of consciousness; but the child gradually learns to distinguish and compare what he sees, feels, and hears, and to assume that his feelings are caused by objects existing beyond himself. By continually seeing his mother or his nurse he learns to recognise them, as distinct from other persons or objects. Then, by comparing the impressions of touch with those of sight, he elaborates, by slow degrees, the ideas of substance, of resistance, and of extension, and attaches physical qualities to certain objects. By incessant efforts he learns the use of his muscles, and what muscles to use for a desired motion. From the appearance of objects he learns whether they are beyond his reach. Naturally mistakes are often made in learning; the infant gropes, and misses many a thing he wishes to lay his hands upon. By degrees he learns the true line of vision. He grasps at many objects beyond his reach ere he learns how to judge of their distance, or their relative size.

When the child comes to be able to co-ordinate his muscles, so that he can walk, his mental progress is very rapid. He recognises persons and things long before he knows their names; he is extremely observant, and examines everything. In fact, he often notices things which escape the attention of ordinary people. His apprehension of the motions of others is often represented by imitation, which is a species of wordless language. Any one who attentively watches the growth of a child's intelligence will find that ideas do not accompany words, but precede them. The period when speech commences is some time after generalisations and abstractions are formed in the mind. His few words, when he begins fairly to speak, answer to a great many ideas, and pass from an individual to a general sense. If he learns one word, he uses it to express associated ideas, in a way

which, if we consider his limited experience, is very skilful. Thus, a child saw a salmon, and learned the name. After this he called all fishes "salmons"; then some one gave him sugar fishes, he immediately recognised the resemblance, and called all sweetmeats salmons. Ideas stand in the child's mind between the words, the words being, as it were, landmarks to explain or indicate the drift of his thoughts. He rapidly learns the properties of objects, and generalises on the changes of the outer world. He distinguishes colours and other properties of matter long before he can name them. In learning to speak, children generalise grammar for themselves, and do so correctly where custom has led us wrong. They decline irregular verbs in a regular manner, and give regular declension to nouns which have irregular inflections. A child says, for example—I falled. The mouses runned away. The sheeps drinked—and so on.

The child has gone through a series of intellectual processes. He has learned to adjust and measure his muscular efforts to produce certain motions. He has ideas of distance, of the relative solidity of bodies, of their smell and taste, of heat and cold, of time and space, of what is pleasant and unpleasant, and of all the familiar phenomena of nature. In fact, most of these acquirements are made by the deaf child, who has no idea of speech, and has not yet learned signs. It is common enough to ignore the intellectual character of these early inquiries, and to talk of them as something instinctive and intuitive; and it is only a careful analysis that helps us to make out the purely mental character of many things we have not learned through words, and which we do not habitually associate with words.

Lest we lose ourselves in too wide a field, let us consider how much the mental element enters into some of our habitual perceptions. In this inquiry I have taken Helmholtz as my guide, and perhaps one of the most striking of the laborious investigations of this philosopher on the Physiology of the Senses, especially of sight and hearing, is the demonstration how much the action of the mind enters into the perception of the outer world. Perceptions believed to be intuitive or reflex, are really mental operations performed

with such ease and rapidity, that the mental interpretation is confounded with the sensory impression or the recognition of a simple sensory impression. At the end of the "*Handbuch der Physiologischen Optik*," * Helmholtz remarks that it appeared to him always preferable to found the explanation of natural facts upon the least number and the best ascertained of hypotheses. He adds, "I ought also to say that in the course of these researches, which have taken up a good part of my life, the more I have learned to submit to my will the movements of my eyes and my attention, the less it has appeared admissible to explain the principal phenomenon of this class by the action of pre-existent nervous mechanism."

Helmholtz defines a representation (*Vorstellung*) as the idea or image that our memory gives of an absent object. The word apprehension (*Anschauung*) is the perception accompanied by corresponding sensations. Impression (*Perception*) is a notion which contains nothing not immediately arising from the sensations of the moment, that is to say, a notion such as might be formed without any remembrance of what one could have seen before. Thus, the same notion may be accompanied by very different degrees of sensation, and the representation or mental act of recognition may combine in very different proportions, in the observation of an outward object.

Helmholtz illustrates this, by reviewing what takes place when we enter a room with whose details we are familiar. During the day our movements are regulated purely by our sensations of light and the general interpretation we assign to them; but in the dusk we could only distinguish a few known objects, such as the windows, and what we really distinguish is so confounded with our recollections, that we can still walk in it with confidence, and find the objects we seek, even when we can only seize a vague image which would be quite insufficient to distinguish objects without the knowledge previously acquired. But when the room is completely dark, we can still find our way in it by the recollection of the

* I have used the French translation by Emile Javal and N. Th. Klein, Paris, 1867.

images already seen during the day. Thus, by cutting off successively the impressions furnished by the senses, we can pass progressively from the sensual notion to the pure representation. Our movements become so much the more uncertain, and our notions so much the more inexact, as the information of the senses fails. Nevertheless there is no leap; on the contrary, sensation and memory assist one another in a continuous manner, but in different proportions. The influence of the interpretation of sensations is still more striking when, in certain circumstances, such as an insufficient light, a visual image is at first incomprehensible, because we do not know to what distance to place it; when, for example, we consider as near, a light which is far off, or *vice versa*. Suddenly we comprehend its real nature, and instantly the influence of this exact comprehension develops the real notion in all its energy, and it becomes impossible to us to return from that notion to the inexact notion which has preceded it.

Within a certain latitude, objects indeed appear to us just as we conceive them, and by altering our conceptions we alter our perception of the object. This is well illustrated in some of the diagrams in Helmholtz's book. One engraving appears either a flight of stairs in front of a wall, or the wall seems to advance to the edge of the steps, so that we have below a row of stones advancing and overlapping one another; or in another drawing, the same surface appears a plane or a cylinder, or a plane and a concave surface when we look upon them with a different conception in our mind; and one can modify the pictures in his mind by conceiving a different representation through voluntary effort. Thus, while vision draws the mind, the mind guides our vision, and what is seen is received in obedience, not only to the laws of optics, but to those of psychology. It is difficult for us to conceive that we do not see things as they appear to us projected into space; but it is now no longer capable of dispute that our ideas of size, space, and distance are the results of acquired knowledge, founded on mental efforts and experiments principally made during the years of infancy, either before speech has begun or before it has come into

free use. The well-known cases observed by Cheselden, Ware, Wardrop, Dufour* and others, where those who had been born blind or had been blind from early infancy, were suddenly, by surgical operations, put in possession of their sight, show that a man of full intellect cannot distinguish distance by sight alone. They simply see a coloured surface, that is, a surface on which light is variously refracted and reflected. All objects appear equally near to the eye; objects known to the touch are not recognised by the eye until the person becomes accustomed to compare his sensations of touch with those of vision. Even a simple object like a key, the outline of which can so easily be felt and seen, consisting of a ring, a cylinder, and a lock, could not be recognised by the eye alone; and apparently one in this condition coming new into the possession of sight, cannot even distinguish a body in motion from a body at rest; that is, he does not conceive that successive impressions of the object over the field of the retina imply that it is moving. Our idea of size is the result of a mental effort, and is closely connected with our idea of distance. A body which presents a certain visual angle to the retina, or, in other words, whose outline presents a larger spot on the retina, feels larger to the finger than one where the visual angle is smaller; but then we have learned by experience that the farther an object is from our grasp the smaller the visual angle becomes; hence we regard those objects which present a small visual angle, and whose ordinary size has been well ascertained, as being at a distance from us, in proportion to their apparent size.

With the perception of an object we, at the same time, take in the notion of distance, which at first seems to be a part of the sensation itself, and has been believed by others to be intuitive, none the less easily that we have forgotten the slow and tentative process by which, during infancy, the phenomena of the outer world have been examined and arranged in our minds.

In judging of distance, we take advantage of a large

* The observations of Dufour, with a recapitulation of what is known on the question, are recorded in the *Journal of Mental Science*, July, 1877.

number of observations when we look at well-defined objects. We rarely mistake the distance of objects within reach of our arms; but this is the result of incessant practice. In doing this, we take into consideration their relative size, and clearness of outlines. In looking at more remote objects, we principally take into consideration their relative size, the distribution of shadow, and the modification of colour, by the intervening air. Thus familiar objects, like men and animals, are of great use in determining the distances of the ground upon which they stand or move. In attempting to judge of the distance of far objects, men are often mistaken, and we are generally conscious of the mental effort to arrive at a proper conclusion. Experience and intelligence here can be easily recognised as coming into play. Indeed, it is a part of the education of military men to judge of the distance of approaching forces, in order to know when to open fire, and with what species of projectile, whether with round shot, grape, or canister, as they come nearer, or how long to make the fuse of the shell. Optical instruments have been constructed to allow us to measure the visual angle under which the height of a man appears, and thus to deduce the distance by reading off a corresponding figure. Houses, trees, and shrubs being of a variable size, are less certain guides, and sometimes help to deceive us. In looking at a mountain of unknown height, we note its colour and the apparent distance of the intervening objects. We note the objects upon its sides, such as trees or precipices, and their relative size and sharpness of outline. If the profile of one hill hide a part of the other, we assume that it is nearer. We thus gather together a number of data which help us to judge of its distance, and thus of its height. We are also helped by the consciousness of the necessary effort of the accommodation of the eye, and by the degree of convergence or divergence of the lines of vision from each eye. The accommodating power of the eye itself is of little use in calculating distance, but the motions of the head and those of the body are of much service. We know by experience that near objects, when we move towards them, appear more quickly to approach us than far objects; that objects on each side of us, when we move

quickly, seem to move quickly towards us when they are near, and to move from us when they are far off.

As Berkeley has remarked, the ideas of space, outness, and things placed at a distance, are not otherwise perceived by the eye than by the ear. "Sitting in my study," he writes,* I hear a coach drive along the street. I look through the casement and see it; I walk out and enter into it; thus, common speech would incline one to think, I heard, saw, and touched, the same thing,—to wit, the coach. It is nevertheless certain, the ideas intromitted by each sense are widely different and distinct from each other; but having been observed constantly to go together, they are spoken of as one and the same thing. By the variation of the noise I perceive the different distances of the coach, and know that it approaches before I look out. Thus by the ear I perceive distance, just after the same manner as I do by the eye."

In giving these preliminary statements, I do not wish to write a treatise upon optics, but to have the reader to note, and to go on noting, that in all these processes not only are the senses employed, but also the mind; play is given to the memory, comparison, judgment, and imagination.

The longer we live the less we are inclined to examine objects in all their parts. We scan them rapidly, taking only enough note of them to make out what they are, or to recognise those parts and features which interest us. Hence, if we look at objects from a new point of view, we often see something in old familiar things which we had not noticed before. Helmholtz illustrates this by the observation that the colours of a landscape appear with more brilliancy and clearness than usual when one views it lying on the side or turning the head upside down. As a rule, he observes, we only seek to recognise objects for what they are. We know that green surfaces present a shade a little modified when they are seen at certain distances; but we are accustomed not to take any notice of this modification, and we learn to identify the modified green of forests and distant trees with colours they would have at a short distance. Remote objects,

* "An Essay towards a new Theory of Vision," § xlvii.

like chains of mountains, have very little of their own colour, because it is in general toned down by that of the intervening atmosphere. This undefined greyish-blue, bounded above by the clear blue of the sky or the orange light of the evening, and bounded below by the deep green of the meadows and forests, is very subject to modifications by contrast. We know that this colour in the distance changes with the time and the degree of light, and we do not seek to determine its true nature, because we have not to assign it to any defined object, and we know it was exposed to modifications; but whenever we put ourselves in exceptional conditions, when we look under our arm or between our legs, the landscape appears a flat image as much on account of its unaccustomed position to the eye as on account of the inexactitude of the binocular apprehension of distance. When the head is turned upside down we see the cloud in an exact perspective while terrestrial objects present the aspect of a picture upon a vertical substance, the ordinary aspect of the clouds. Forthwith the colours lose their relation of the distance of objects. They appear as they are with their real differences. We then recognise without difficulty that the undetermined greyish blue of the distance is often a deep violet, that the green of vegetation is insensibly transformed into bluish-green and then into violet, where it meets the circular line of the sky. All this difference appears to me to result simply from the colours being no longer signs of the nature of objects, but only of different sensations, and for this reason that, no longer led into error by other considerations, we recognise more readily the real differences.

Helmholtz's observations and experiments show that even in the recognition of a colour, where so little seems left for the mind and so much for the mere sensory impression, our perceptions are sometimes altered by ideal anticipation or inference; but owing to a regard for brevity, I must refer the reader to the book so often quoted.

As another illustration of the way we overlook some visual phenomena, Helmholtz gives the movements of a man when walking. We regard them as a whole, and do not notice any more than their most striking singularities. It

requires great attention* to recognise the vertical and lateral oscillations in walking, but if we look through an astronomical telescope, where the images are reversed, at men walking at a distance, we see with surprise the leaps and strange oscillations which accompany walking. There is no more difficulty in recognising the oscillations of the body and other peculiarities of walking. On the other hand, with reversed images we do not readily recognise the character of the walk, whether it be easy or heavy, majestic or graceful. It is at first somewhat puzzling to look through a photographer's camera. The figures appear upside down, and the background of the landscape becomes the foreground, so that the farther off the figures seem to go the larger they look. A dog, appearing to be behind people, really in front of them, looks twice or thrice as large as a man. We do not see distant objects as we see them when near. We see something indistinct, and from experience founded upon generalised observation we believe that it is far off, and by certain other marks we infer that when we have traversed the intervening space it will present the reflections and the refractions of light, and the phenomena of touch and resistance and other accompaniment of a castle; but the visual impressions of a castle at a great distance are quite different from what we see when we come near to it. Thus we read symbols upon the face of nature which we have learned to associate with ideas derived by the use and comparison of our senses, reflections and desires, very much as we interpret engravings or combinations of letters in a book. The field of our vision then is a half figurative, half ideographic chart from which we read off what interests us or what we want to know, and the longer we live the more attention do we pay to the ideographic characters of nature and the more do we discard the examination of pure sensory impressions.

The process by which we accustom ourselves to disregard so much of what is laid before our attention by our senses is thus happily described by Itard: "In proportion as man advances beyond the period of his infancy, the use, the exercise of his senses becomes every day less universal. In the first stage of his life he wishes to see everything, and to

touch everything; he puts to his mouth everything that is given him; the least noise makes him start; his senses are directed to all objects, even to those which have no apparent connection with his wants. In proportion to his advancement beyond the stage of infancy, during which is carried on what may be called the *apprenticeship* of the senses, objects strike him only as far as they happen to be connected with his appetites, his habits, or his inclinations. Afterwards it is often found that there is only one or two of his senses which awaken his attention. He becomes, perhaps, a musician, who, attentive to everything that he hears, is indifferent to everything which he sees. Perhaps he may turn out a mere mineralogist, or a botanist, the first of whom, in a field fertile in objects of research, can see nothing but minerals; and the second, only vegetable productions. Or he may become a mathematician without ears, who will be apt to say, after having been witness to the performance of one of the tragedies of Racine, 'What is it that all this proves?'"

The phenomenon of single vision with two eyes, which has perplexed philosophers so much, seems capable of a simple explanation. The mind, finding by experience that images impressed on certain points of the two retinas which stand in a certain relation to one another are really one object, recognises them as such, *i.e.*, two objects of the same colour and outline placed in a certain plane to one another are fused into one object by the mind, as is done in the stereoscope even when the motions of the eye are restrained, or the two objects seen by an instantaneous flash of light allowing no time for rotation of the eyes. If, however, one of the objects in the stereoscopic slide is different in form or in colour they are seen as two objects.

So completely does experience get the better of sensation that it is difficult for us to prove that we really see double images, and one great difficulty lies in our belief that two images of the same appearance really belong to one object. Even a certain amount of difference of outline does not prevent us fusing the two images into one, for the two eyes do not always see an image exactly alike. Most people

have never remarked double images, although, as Helmholtz says, the presence of these images in the field of vision is almost constant. It is difficult for us to dissociate double images of lines of the same colour and of the same intensity when they are traced so as to represent almost exactly the images of one and the same objective outline. But the movements of the eye are the principal obstacle to the perception of double images. When we examine an object we fix successively different points of its surface in such a way that the cavities of the retina constantly receive corresponding images. These are the images which are perceived most clearly and which attract the most attention. As soon as our attention is directed upon one point of the object which is situated laterally, and which perhaps presents double images, our eyes are turned almost involuntarily to fix it, which we can only prevent by an express effort of attention. Thus to distinguish double images as well as possible, one must keep the eyes immovable and look at a fixed point.

Strange as it may seem, we have not even, apart from experience, any knowledge of the line of vision, *i.e.*, the direction of a visible object, which is learnt by the comparison of sight and touch. In an experiment described by Helmholtz, objects are seen rotated from the usual line of vision, by being viewed through prisms. Objects are for a time seen double, but in a short time, by moving the eyes, so as to compare the surfaces, they are seen single. In like manner, when objects are deviated to the right or left, by looking at them through two prisms, placed upon the framework of a pair of spectacles, the hand stretched out to seize them at first deviates in the same direction; but in process of time the mind learns to correct this miscalculation, and we begin to see the object in a new line of vision, the result of new inferences upon altered conditions of refracted light.

There is little doubt that a man could learn to play at chess or draughts without words, and without knowing the names of the pieces. He might even learn to play at whist, where there is a necessity of a system of communication existing between himself and his partner. I have, by diligently

watching the operations of my own mind, noticed occasions in which thoughts, based upon a certain amount of calculation, were transmitted into actions, without any accompanying or intermediate words; but, of course, such processes cannot be exhibited to another without being put into words, so that I can do little more than ask my readers to look for similar processes in their own minds. Unhappily, this is asking them to run against the current, since one is nowadays much more likely to keep up the air of profound wisdom by calling sensory and motor processes intuitive, unconscious, reflex, or automatic, than by trying to analyse them, as Helmholtz has done, for our sensations of sight and vision.

These observations will be found to hold true of perceptions made through the other senses. That distance may be measured by the ear as well as by the eye, has been already noticed. Helmholtz has shown that the sensation of the tone of a sound is composed of a series of sensations of its different component parts—the fundamental sounds and the harmonic sounds; but the mind having got into the habit of regarding the whole as a single sound, it becomes extremely difficult to decompose the composite sensation into its constituent parts—*i.e.*, to make the harmonic tones heard so that the mind may recognise that they are distinct sensations, which could be easily distinguished if they occurred in less perfect simultaneity. The tactile sensation of a moist surface is composed of that of cold and that of sliding: but when we suddenly put our hands upon a cold and polished surface, we often think that we have touched something moist.

But whatever the amount of mental interpretation or inference contained in a sensation, it imposes upon us with the same force as if it were a sensory impression and nothing more. The mind appears to receive it passively, as something we cannot correct without denying the evidence of our senses. As Epicurus long ago pointed out, illusions of the senses are simply wrong inferences. The mind is in the habit of believing a given sensation to be the result of one habitual cause, and when the same sensation is produced by a different cause which acts more rarely, it is difficult to resist the involuntary impression which connects it with the

more familiar agency under which it is habitually produced. Thus, a galvanic current, or simple pressure upon the optic nerve, will bring out an impression which we call a flash of light; we feel as if this were produced by light, and nothing else; or, when the leg is cut off, patients think they feel in the foot or the toes what is really caused by the irritation of the severed nerve. When there is a mirror on the roof and one looks up to it and sees his image, he feels the dread of falling downwards, just as he does when he stands on his head and looks up to the roof. Custom enables us to correct these illusions. Thus, when we approach an object quickly, the nearest objects seem nearer, and therefore smaller than what they really are. This is readily perceived in riding rapidly upon an object, so that one who is inexperienced in making a cut or thrust from horseback, finds that he almost constantly mistakes his real distance, but this illusion disappears through practice. And, indeed, many illusions disappear after the observer has had some practice in making his judgment independent of external influences.

It has been much debated whether, as Sir Charles Bell has advanced, there is a muscular sense, or whether the feeling we have of posture and accomplished movement is not communicated through the parts covering and surrounding the muscles, with the assistance of vision; but at any rate we know that the mind has a very delicate knowledge of the force raised in the muscles through the incitations of the voluntary nerves, and how the force is modified in order to overcome resistance.

Every motion is a problem in mechanics, in which we measure the requisite amount of power to the weight of the parts to be moved. When we have some foreign body to lift, we start with a conception of the weight. It is said people, unaware of the great weight of quicksilver, when they get in their hands a vessel full of it, often spill it, owing to their estimate of the amount of force required to be expended being too low. On the other hand, a scientific observer, when he poised upon his finger a small piece of potassium, newly discovered by Sir Humphrey Davy, exclaimed, "Bless me! how heavy it is;" the anticipation derived from sight having

deceived the sense of touch and weight, as he had been accustomed to associate a metallic lustre with a high specific gravity.

As in viewing objects, the mind gradually withdraws its attention from the whole visible surface to one or two points of recognition, so in walking and executing other customary motions, the mind gradually minimises its attention till it attains the smallest amount requisite to carry on the operation, leaving itself free to devote its energies to other objects. The power of the mind to occupy itself with a number of parallel objects of consciousness is worthy of more attention than it has received, and it is from neglecting this consideration that some have too easily acquiesced with the superfluous theory of unconscious cerebration, and even been led to believe that a man could thread his way in a crowded thoroughfare without paying the smallest attention to the passers-by, or the many objects which he has to avoid and guard against. There is a well-known case of a woman who lost the sensation of one arm, and who was liable to drop her child when her eye did not rest upon it. This may be considered a proof that, even when she might be thinking on something else, a certain minimum amount of consciousness was necessary to this simple operation, which could be so easily combined with other actions.

In like manner a man may have a heavy body in his pocket, and believe that he had no distinct consciousness of the weight; but if the weight was suddenly pulled out of his pocket by some one unknown to him, he would at once perceive the difference—*i.e.*, between the weight he formerly supported and the weight he now supported. But in order to make the comparison, he must have known both the first and the second weight which he had still to bear.

It may be that some acquired motions by long habit become reflex and unconscious. They cease to be cerebral and become spinal; but these motions are not complicated, and resemble innate reflex actions in their uniform and unvarying character.

Dr. Laycock has extended the theory of reflex action to operations performed under the influence of the cerebrum,

and there are some, such as laughing, to which the name of reflex cerebral action could fairly be given, but it was sought to include under this definition a great number of other motor processes, in which the analogy was much looser. In one point of view, all muscular motions, voluntary and involuntary, might be said to be the result of reflex action, since it is generally admitted that the mind only acts upon the body through impressions derived from the sensory nerves; but there is this important difference, that in the one case the mind was called into play, and in the other it was not, and for this very reason the reactions in the one case are regular and invariable, and in the other variable and inconstant. Dr. Laycock taught that the laws of reflex action applied to every form of animal organism and even to some plants. This was giving to the term reflex a meaning too loose and vague, and by attempting to cover processes so easily distinguishable by one word, there was a risk of throwing back the subject into the confusion from which Marshall Hall had rescued it by the matchless clearness of his definitions.

In the life of a man of the learned class most of his thoughts are transmuted into speech, going off in talking, lecturing, debating, and writing; but with men of other conditions much of their mental life passes into action. Take the instance of a hunter spending his days in solitary places amidst the mists and changing lights of the hills. He follows the traces of animals, listens for their coming, searches the thickets with his gaze, calculates their motions, interprets their turns and attempts to escape. Now he is pushing through the thickets; now he is climbing the rocks, adjusting his balance every moment that he makes a new step, and calculating what will bear his weight; then loading, taking aim, firing, and defending himself from the assaults of wild animals. Such a man goes through a great deal of mental effort and feeling which directly passes into action. No doubt it may now and then be associated with words, but not necessarily so, and often words must be absent. When his observations and thoughts are busiest and his feelings most intense, they will be most actively employed in guiding his motions.

In like manner a trooper riding his horse into battle, to use a common phrase, must have all his wits about him. He guides his horse with his left arm, keeping him as well as he can in line with the horses to the right and left; he holds to the saddle with his knees, impels the horse with his spurs, and maintains his balance with the help of his stirrups,—that is, he not only keeps himself on the back of an animal going in rapid motion, but he guides and controls the animal. When he reaches the enemy he has to shelter himself from the cuts and thrusts sometimes of two or three adversaries in rapid succession, to interpret their feints and elude their guards so that he may strike an exposed part. The mental effort is all the more intense that he knows a single slip will cost him his life, and the execution of these different mental and bodily actions is something wonderful.

It is too much forgotten that with human beings thought and execution are inextricably blended, and that what is called physical or mechanical work always includes some mental work too. There was little need for being surprised when it was shown that the motions of the limbs could be set agoing from electrical excitation of a central part of the top of the hemispheres of the brain. "I cannot conceive," writes Dr. J. Hughlings-Jackson, "of what other materials the cerebral hemisphere can be composed than of nervous arrangements representing impressions and movements." Dr. Jackson adds that he had long taken this for granted when considering what was commonly called the physiology of mind, especially with regard to speech, but there was little need for such a restriction.

Every voluntary act is preceded by a thought, by a conception of the act, and of the object to be attained by it, and when the object is accomplished by the performance of the act there is a recognition of the result, and then a new thought and a fresh act. The sculptor conceives of a figure of surpassing beauty and nobleness of form; he moulds his ideal in clay, and then chip by chip he works it out from the marble block; but the mental process which he has gone through could not be expressed in words; in fact, there are some actions as well as some-perceptions too fine to be

expressed in words. A man receives an unsigned letter which he can read to twenty others, and which twenty others can read, so that each knows its contents equally well; but only one recognises the handwriting from certain peculiarities which he cannot describe. He, therefore, knows more than all the rest, since he knows who wrote it. In all crafts there are some fine touches which cannot be taught by precept or even by imitation, and which the mind must find out for itself without words, and which it cannot teach by words. A man does not know any better how to walk because he knows the anatomy and physiology of the muscles. In rowing or managing a small boat a man can do everything without words, or without having words for its different parts; but a ship could not be managed in this way, for it cannot be worked by one hand, and therefore speech must be used so that the different hands can be directed by one head. There must, therefore, be a name for every part of the ship, and words for every manœuvre which can be done on board.

It frequently happens that a man can perform some work very skilfully without being able to explain how, as he is not accustomed to associate his actions with words. If very anxious to explain how he does it he acts the thing over in imagination, and then tries to find words to describe the revived actions.

In fact, the performance of intelligent and cleverly calculated actions, without any accompanying words or thoughts associated with words, is a common proof which a little well-timed observation and analysis will reveal to any one who watches his own thoughts.

Naturally, if a child be dull or stupid, he will be slower to learn the use of the senses or the muscles, and, accordingly, we find that some idiots of the lowest type are not able to learn to walk or grasp. I remember one case distinctly where the only acquired motions were receiving food into the mouth, and following with the eyes the spoon with which he was fed.

Imbecile children are slower in learning to walk or execute other movements than those of normal intelligence; even

after they have learned to walk, their gait is slow, uncertain, and awkward. They learn to walk in the easiest manner, which they never try to alter or improve. The best and earliest sign of idiocy is the deficiency of grasp. The hand is flapped or vibrated about instead of being employed to seize or obtain an object. Imbeciles are clumsy in the use of the hands, and it is difficult to teach them any exercise or handicraft requiring method and dexterity. An easy but superficial way of explaining this deficiency, is to say that it is owing to want of nervous power, deficient sensation, to weakness, or to want of motor capacity. This may hold good in some cases, but in many it is simply owing to the want of the guiding power of the intellect. It would be difficult to say how far idiots are deficient in the proper estimation of size and distance, as their answers to questions are little to be depended on; but I have seen instances in those of a low type, where they grasp at objects obviously beyond their reach. Even imbeciles who can speak, and have a decent degree of intelligence, are generally very inexpert at such exercises as catching a ball, or aiming at anything, and it is difficult to teach them greater dexterity. Their awkwardness at any unaccustomed movement is sometimes very striking. I have seen imbeciles who were nearly grown up, totally unable to perform such simple motions as pronation and supination of the forearm, but who on being taught soon learned to do so.

No one is likely to deny that in insanity the power of recognising and interpreting phenomena is much injured; but very little inquiry has been made into the question: Whether, since the intellectual processes by which we arrive at the perception of size and distance, and the use of our muscles, are very slowly learned, or imperfectly performed in idiocy, are they ever deranged in insanity? Amidst their wild reasonings and false inferences, have lunatics false ideas of distance or size, and in the obliteration of the mental faculties, which takes place in dementia, do they lose their estimate of distance, or their notion of the proper size of objects? How far is the play of inference and causation that accompanies our sensuous life disturbed in mental derangement? or can the extraordinary perversity in the notions

of the insane be occasionally put down to the loss of mental guidance?

As already said, there is no doubt that in insanity the capacity of interpreting our sensations is much deranged. Some lunatics lose, as it were, the power of interrogating the impression of the senses, of selecting those impressions to which they are wont to pay attention, and correctly judging of their real import. The power of the will is lost, while the conscious mind is the witness of the passage of a procession of wandering ideas, no longer under the control of the judgment, and which it can neither guide nor check. In fact, insanity has often a strong resemblance to the ordinary state of dreaming, in which outward feelings excite ideas, uncontrolled by the parallel acts of consciousness, which accompany us in the waking state, and which keep us informed of our real situation. Many of the delusions of the insane are perverted sensations, and not unfrequently, their origin is explained by lesions found after death. Lunatics assign pain or uneasiness really felt to rats or snakes, or other imaginary animals within them; to little men, who creep under the bed-clothes, and tear or pinch them, or to the malign influence of magnetisers, poisoners, or other tormentors. The patient may talk composedly, and will often argue gravely and plausibly in support of the most monstrous delusions. In insanity the power of imagination or the anticipation of sensations is very strong. He will mistake one of his family for an enemy come to injure him, or a fiend to torment him, and murders are sometimes committed under such false impressions. In the following instance we have a delusion reduced to its simplest elements:—"An insane person refused to drink, assigning as a reason that there certainly was a person in the bottle containing the water offered to him. The physician, during the patient's meal, observed that the light fell on the bottle in such a manner, that he could see his own likeness in it; but on changing its position, the patient (not seeing his likeness) no longer refused to drink." *

* See "Lectures on Insanity," by Sir Alexander Morison, M.D. London, 1848, p. 129.

We are well accustomed to deduce from our sensations the objective nature of external objects, but in general we are completely unused to observe our sensations themselves, especially in cases where we cannot assign them to external objects, and this proclivity to refer our sensations to external objects often hinders us from having an exact consciousness of these sensations. In some abnormal mental conditions where the patient is much given to the introspection of his own condition, the result of external impressions is sometimes mistaken for subjective changes; for example, I knew of a patient who was subject to alarming fainting fits, which were preceded by a sudden feeling of cold. He was very apprehensive and watchful of these fits coming on, and for years after an unexpected current of air gave him a fearful start, as he instantly interpreted the sudden cold sensation as a return of the faintness.

Dr. Maudsley * tells us: "One of the effects of aconite, when taken in poisonous doses, is to produce a feeling as if the body were enlarged or were in the air, mainly perhaps in this instance because of the loss of sensibility of the surface of the body, which is an effect of the poison, whereby the person does not feel himself in contact with what is outside him; the part of the body from which he gets no message when it is touched appears therefore to be no longer his, and he interprets the interruption of feeling between him and the outside objects as an actual separation of substances such as would be produced by the body being in the air.

The history of hysteria is full of these instances where subjective phenomena are interpreted as objective ones. I have not been able to collect many instances where there were illusions with regard to size and distance, but it appears that they may occur where there is no mental derangement whatever.

A member of the medical profession informed me that some years before, being in weak health, objects appeared to him to be smaller than usual, just as if they were looked at through the big end of a telescope. This produced the notion that near objects were at a distance, but on his putting out his

* "The Pathology of Mind," London, 1879, chap. i., p. 36.

hands to touch them the illusion immediately disappeared. He found that he could bring on and dispel the illusion at will ; but getting into better health it finally disappeared. This is interesting as coming from a trustworthy observer. He seemed disposed to attribute the appearances to a change in the shape and position of the crystalline lens ; but though it is no longer disputed that a power of accommodation to distant objects resides in the crystalline lens which can change its degree of convexity, in ordinary physiological states at least there is no such amount of adjustment as to explain the effect. Moreover, in a mere change, such as would be produced by diminished convexity in the lenses of the eye, the contact of the hand would not readily destroy the illusion, for the hand as well as the object would appear smaller and therefore more distant.

Dr. Grierson, of the Roxburgh Asylum, told me of a lady who, in her last illness, saw her husband and children smaller than usual, and regretted that they always appeared to be so far off.

The condition following the use of Cannabis, or Indian Hemp, or Hachisch, closely resembles the delirium of insanity. The alteration of our notions of time and space has been remarked by most writers on the subject.* "Time appears of an immeasurable length. Between two ideas clearly conceived, there are an infinity of others, ill-determined and incomplete, of which we have a vague consciousness, but which fill you with wonder at their number and at their extent. It seems, then, that these ideas are innumerable ; and as time is only measured by the remembrance of ideas, it appears prodigiously long. For example, let us imagine, as is the case with hachisch, that in the space of a minute we have fifty different thoughts ; since, in general, it requires several minutes to have fifty different thoughts, it will appear to us that several minutes are passed, and it is only by going to the inflexible clock, which marks for us the regular passage of time, that we perceive our error. With hachisch the notion of time is completely overthrown : the moments are years, and the minutes

* The following description of the effects of this drug has been translated from an article in the *Revue des Deux Mondes*, Mars, 1877, "Les Poisons de l'Intelligence, par M. Charles Richet."

centuries; but I feel the insufficiency of language to express this illusion, and I believe that one can only understand it by feeling it for himself." The author illustrates this by the rapidity of thoughts which is noticed in dreams.

"Quite as astonishing is the illusion of sight, which makes short distances appear immense. I do not know if this appearance has been observed in other conditions than in poisoning by hachisch, nor can I give a rational explanation. The description is difficult. In this illusion a bridge or an avenue appears to have no end, and to be prolonged to unheard of improbable distances. When one ascends a staircase the steps seem to rise to heaven; a river, whose opposite bank we see, appears as large as an arm of the sea. Vainly one notices the error of which he is the victim. The judgment cannot rectify this appearance, and we say, 'Here is a bridge which has a hundred mètres, but it appears to be as long as if it were 100,000 mètres.'" The author says that these two delusions are very persistent, and often last more than twenty-four hours after the injection of the poison.

Sensations of a similar kind following the use of hachisch are thus described by Charles Bandelaire*:—"The actors seemed to me very minute, with precise and well-developed outlines like the figures in the pictures of Meissonier. I saw distinctly, not only the smallest details of their dress, as the patterns of the cloth, the seams and the buttons, but also the line of separation of the fringe of false hair from the forehead, and all the other arts of disguise. These Lilliputians had a clear, cold appearance, like what a thin covering of glass gives to an oil painting. When I came out of this phantasmagoria and returned to myself, I felt a greater fatigue than I had ever experienced through any prolonged or forced work."

In this period of intoxication one experiences a new delicacy and swiftness of perception in all the senses; smell, sight, feeling, and touch equally share in this increased power. The eye searches the infinite; the ear perceives the faintest sound in the middle of a tumult. It is in this state that the hallucinations commenced.

* "Les Paradis Artificiels," Paris, 1869, p. 187.

My friend, Dr. Aitken, of the Inverness District Asylum, has indicated to me a letter from Dr. Chubb* describing some effect produced by giving one-sixth of a grain of hyoscyamine. A lady took up the box of pills, and said that the doctor must have given her one of the larger ones. The pills were all of the same size, and this strange derangement of vision, which lasted until the next day, must have been owing to the use of the drug.

I have not been successful in collecting many cases of such illusions in insanity. The subject has been little studied, and several eminent physicians, experienced in the treatment of the insane, have frankly confessed that they have paid very little attention to the question started by me. Possibly an intelligent observer, with good opportunities, might succeed in reaching some interesting results. The following notes will, at any rate, show that the subject has not been entirely overlooked.

Dr. W. A. F. Browne† tells us that Saussure, the celebrated Swiss geologist and physicist, was possessed with the idea that he had grown to an enormous size, and although he knew this notion to be unreal, he ordered doors and partitions in his house to be removed, or enlarged, to facilitate free passage for himself. Saussure had three attacks of paralysis, of which he died, after four years of suffering.

Dr. Browne had a patient who imagined that he did not exceed the size of a barley-corn, and that he was in imminent danger of being carried away by the sparrows, and who would not enter the airing court for fear of being trodden under foot.

Dr. D. Hack Tuke in his work, "Insanity in Ancient and Modern Life,"‡ tells us of an insane gentleman whom he knew who believed that he was the Man of Sin spoken of in the Bible. Speaking of outward nature he said, "Everything has changed its aspect. Objects around me are no longer seen in perspective, but appear flat and raised above one another like a Chinese drawing. Spring will return no more."

Dr. Frederick Skae once told me of a patient seized with

* In *British Medical Journal* for 31st August, 1879.

† See his pamphlet on "Anæsthesia, Hyperæsthesia, Pseudo-æsthesia, chiefly as met with among the Insane," 1873.

‡ Chap. vii., p. 155.

sudden insanity, which was cut short by timely treatment, where the man said that objects appeared to him to be larger than usual.

Dr. Hibbert writes : * “ A gentleman whom I know in Edinburgh saw, about twilight, a cow magnified to ten or twelve times its original size, grazing on a field, like some of the Brobdingnag cattle described by Swift.”

Dr. Toselli, in a paper already cited (p. 39), says that illusions of the muscular sense frequently accompany the religious insanity of epilepsy. He thinks that the sense of vast strength is derived from the feeling of extraordinary stature.

Dr. Weiss, † amongst some examples of psychic epilepsy, mentions the case of a sailor who did extravagant things, of which the recollection soon passed away. In the hospital he remained in a stupid, apathetic state ; but one day he woke up suddenly, gesticulating and talking. He thought himself the captain of a ship, called one patient the steersman, another the cook ; said he was sailing to Jerusalem in the “ Novara.” He correctly indicated the directions of the wind, and called the sparrows sea-gulls. It was observed that he exaggerated the size of objects and distances, and was colour blind. He called all dark colours dark blue, and bright colours bright blue. Black was complete dark blue ; white, strong light blue. As usual, he passed out of this state, forgetting everything he had done in it. On another occasion he saw a black figure standing before him, and thought he was close by the sea, although, as was next day ascertained, he was three thousand paces from the shore.

A young man, who describes his own mental derangement, called Grübelsucht, ‡ or the metaphysical mania, remarks : “ What is singular, often all things round about me appear small, so that, in relation to them, I seem larger, or the reverse. It is also astonishing that my taste for a particular pitch of the notes is often changed ; for example, some-

* “ Sketches of the Philosophy of Apparitions,” by Samuel Hibbert, M.D., Edinburgh, 1825, p. 15.

† *Zeitschrift für Psychiatrie*, xxxv. Band, 1 Heft ; and my resumé for the *Journal of Mental Science*, April, 1879, p. 121.

‡ Die Grübelsucht, von Dr. Oscar Berger, op. cit. p. 187 of this book.

times the middle octaves in the piano appear to me the most agreeable, and the higher notes affect my irritable condition in an unpleasant manner. At a later time the high notes please me, and I like best to hear tunes played on the middle octaves." I do not clearly understand how a man can see things larger or smaller without any change in the lenses of the eye, or in their adjustment, and it is difficult to conceive by what perversion of intellect one could estimate things smaller and larger than they really are. If we saw everything half as large, would the horizon not be doubled? and would it not be contracted when we saw things bigger? or do certain objects appear larger or smaller, while the ground upon which they stand or move retains its usual apparent dimensions? The magnifying influence following intoxication through Cannabis, upon the distance of visible objects, is only a part of a general exaggeration of impressions, mental as well as sensual. Some writers call it Hyperæsthesia of vision. Dr. Moreau* would give to the increased sense of distance the same explanation which Richet restricts to that of the duration of time. Distance is measured by the number of intervening points between us and the extreme point seen: the attention runs from one point to another, and the number of these points being increased, the distance thus seems greater. There are instances on record† where the power of vision is much increased in cerebral disease.

The alteration of sight is not the same as we notice in the use of a concave or a convex lens. The concave glass shows distant objects more clearly, but renders the eye unfit to distinguish near objects; the convex one makes small objects

* Du Hachisch et de l'Aliénation Mentale. Etudes psychologiques, par J. Moreau. Paris, 1845, § iv., p. 69.

† See one in Dr. Forbes Winslow's "Obscure Diseases of the Brain and Mind." London, 1863, p. 471. Dr. Brachet tells of a man who found that his vision had acquired astonishing capacity since the previous day. He could distinguish the most minute objects at an enormous distance. Five hours afterwards he felt a slight headache, and in a few hours more was seized with apoplexy, and died the next night. A recent coagulum of blood was found in the right optic thalamus. The inflammation which had preceded this effusion had affected a part of the brain immediately concerned in vision.

appear greater, but renders us quite unable to discern far objects. Whereas the hyperæsthesia of vision following the use of cannabis, or Indian hemp, renders the eye able to distinguish with greater facility things both far and near, which by multiplying the intervening objects of sight arouses in the mind the conception of increased distance.

Seeing double, which sometimes comes on in the advanced stage of drunkenness and after the use of opium, is probably owing to the loss of mutual accommodation of the muscles of the eyeballs, and this explanation sometimes holds good where the same appearance occurs with lunatics; but it is evident that it cannot always do so, since there are cases where a single object is seen multiplied three or fourfold. Brierre de Boismont, in his well-known work on *Hallucinations*,* reproduces from a German writer a curious instance, which I translate without being clearly able to understand his explanations:—"Madame N., a washerwoman, tormented by violent rheumatismal pains, left her trade and took to sewing. Having little practice in this kind of work, she sat up far into the night to gain enough to live upon. This did not save her from being very poor, and she was seized with severe ophthalmia, which soon became chronic. As she continued to work, she saw at the same time four hands, four needles, and four seams. There was double diplopia in consequence of a slight divergence of the visual axes. At first Madame N. took a reasonable view of this appearance, but, some days after, her destitution having increased, and making a lively impression upon her mind, she imagined that God, pitying her misfortune, performed a miracle in her favour, and that she really sewed four seams at once."

Since our notions of size and distance, and our power of directing the muscular system, being the very basis of all our knowledge, are the first of our acquirements, it is likely that they would be the last that we should lose; hence it is only in the closing stages of dementia or general paralysis that one might expect to find them seriously impaired or totally wanting. Naturally such cases are not favourable for

* Paris, 1852, p. 130.

study or analysis, they *either do not respond at all to our questions or experiments, or give random, variable, and perplexing answers; hence great caution must be used in our search for examples. Not unfrequently general paralytics seem to lose their sense of weight and size: they try to lift things which their strength is insufficient to move, or they try to leap over obstacles which are quite insuperable. We also know that, as a general rule, demented lose all the manual dexterity and muscular adjustment which they had acquired; they gaze around in a bewildered manner; they fumble uselessly with their hands; they stagger in their gait; when they try to pick up their food with a fork, they sometimes miss the bit aimed at several times. Finally, they give up feeding themselves, and cease to attend to the ordinary decencies of life. Is this owing to paresis, or a loss of sensory power, or ataxic conditions of the muscles; or is it, at least now and then, owing to the loss of the ruling intellect, to inability from sheer want of mind to guide the machinery of the body, and suit it to the changes in the world of sense? No doubt there are cases where the mal-nutrition of disease is confined to the brain, and where no fault can be found with the conducting cord or peripheral nerves.

Since the above was published, some observations have been made which may be fairly claimed as pertaining to the questions here considered.

Dr. Fürstner* has described a peculiar disorder of vision in general paralysis, which is not accompanied by any change in the eyes as examined through the ophthalmoscope, and which is thought to be dependent on a lesion on the brain. It seems to occur frequently in one eye only. On fixing the patient's head in a certain position and closing the sound eye, objects such as keys, cups, or knives, when held before the other eye, are not readily recognised; on their being rapidly jerked to the eye the lids are not closed. The patient stares vacantly at a bright light brought close to the eye, and coveted

* The several papers on this curious subject are all in the "*Archiv für Psychiatrie*," Fürstner's, in viii. Band, 1 Heft, and ix. Band, 1 Heft; Rheinhard's in ix. Band, 1 Heft; Stenger's in xiii. Band, 1 Heft; and Zacher's in xiv. Band, 3 Heft.

objects held before him are neglected. He cannot correctly count small objects heaped together. On being asked to write with the sound eye closed, he begins at a wrong place, swerves from the straight line, carries his writing from the paper on to the table, and runs the letters into one another. With the assistance of the sound eye he can write with tolerable regularity; when the good eye is closed the irregularity is increased. Dr. Fürstner thinks that the confusion in vision could not be set down to fatuity, for there were times when the obscurity of sight disappeared without any improvement in the intelligence, moreover the affection may be confined to one eye only. Perhaps it could be explained by assuming a simple dimness of sight with fatuity superadded, so that the intelligence is too slow to struggle with the defects of vision.

Dr. Reinhard, who published a case of this new disorder of vision, thinks that it consists in an alteration of the sense of colour, and the perception of form or shape (*Gestaltungsvermögen*), with loss or diminution of the perception of depth ("*Tiefenanschauung*") and the knowledge of place or direction. These, however, are symptoms in which the mental faculties are involved as well as mere visual power.

The study was continued by Dr. Carl Stenger, who distinguished two disturbances of vision. In the one, there is a loss of the power of perception (*Wahrnehmungsvermögen*); in the other, a loss of the power of recognition, or forming an ideal representation (*das Erkennungs, das Vorstellungsvermögen*), the result of lesions of the occipital lobe, which Munk calls soul-blindness (*Seelen-blindheit*), and Goltz visual weakness of the brain (*Hirnschwäche*.)

Wilbrandt thought that the confusion might be owing to hemiopia or defect of sight in one portion of the retina, so that the individual might make false conclusions which his mental weakness would render him less liable to correct.

In general paralysis there seems to be a rapid loss of the memory of the images derived from the organs of hearing and sight.

Some of Dr. Stenger's patients had evidently lost the power of recognising the import of the sensations coming through these senses, but had also lost the power of learning what

objects were through touch. In another, to use Dr. Stenger's own words, the power of the mind to elaborate the impressions of the senses seemed to be entirely lost. Thus one of his patients did not understand questions or mistook their meaning, so that he gave wrong answers or no answer at all. In speaking, he changed the words and letters, and when objects were held before him, he could not name them. He ran against things in his way, and was not afraid of a lighted body held before his eyes. It was only when he felt the burning heat of fire that he drew back, and when a needle was held before his eyes, he seemed to recognise what it was only when it pricked him. He did not seem to recognise wine till his lips were moistened with it, when he showed the desire to drink.

Dr. Zacher, who has also studied this difficult question, finds soul-blindness a rare affection in general paralysis. It affects both eyes, and is associated with aphasia, and in a greater or less degree with paralysis of the right side. One patient, for example, failed to recognise objects held before him. When bread was brought near his eye, he did not eat, though he did so when it was put between his lips. Nevertheless he seemed to see, for he followed objects with his eyes, and when anything got rapidly near, the eyelids were closed. In some of his patients, after convulsive fits, there was a loss of visual power in one eye, which passed away in a few days. In other cases there was double-sided hemiopia, that is objects were not perceived on the temporal side by one eye, and on the nasal side by the other. We are glad to see that these questions have been taken up. A good deal of further observation and refined analysis must still be made ere sure conclusions are reached.

On the other hand, instances are by no means uncommon where the reasoning faculties are much deranged, as evinced by extravagance in speech, but where the power of doing complicated work and estimating weight and distance are well preserved.

A patient once at Musselburgh, and now in the Roxburgh District Asylum, has often struck me as exemplifying this in a remarkable degree. The man pours forth a torrent of words,

sometimes stating the wildest delusions, sometimes giving vent to the most uncouth combination of words in astonishing variety where one can perceive no connection, or a strange association between the word or the words and the ideas, often in an excited or frenzied manner, and in the midst of all this mad talk he will go on working in a calm methodical way; for example, he will plant out leeks, tracing the lines regularly, and putting in each plant at an equal distance from the other. I do not remember ever to have heard this man make a coherent remark, but I saw an ingenious snare for birds which he had made, and he once showed me two blackbirds which he had caught.*

In this case we may suppose that the convolutions in which the movements leading to speech are inaugurated, are the seat of an irritation which arouses these movements, without waiting for the behests of the reason and the will; a flood of words is let loose, many of which have no associated thoughts, whereas those portions of the nervous substance of the hemispheres which have to do with the direction of adapted motions are at least comparatively healthy, and their communications with the voluntary muscles (save those of voice) unimpaired. The man can therefore act reasonably, though he cannot talk reasonably.

In some of these cases of verbigeration the sounds uttered by the patients are ordinary words, though having little or no connected meaning; in other instances they are a mere chatter of diversified sounds, bearing a delusive resemblance to some foreign language. The "unknown tongues," spoken by the Irvingites or other visionaries, are probably the mixed result of religious faith and pretension, acting upon a brain disordered by pious frenzies.

I do not think many cases have been observed where insanity has been accompanied by the absolute misdirection of the muscles, so that the lunatic executes motions different from what he purposes, as in the patient described by Dr.

* I saw this man last summer working with method and judgment in filling and unloading a wheel-barrow to assist in constructing a terrace on the side of the Eildon hill. The words were coming from his mouth in the same volume as they did fifteen years ago.

Meschede,* of Konigsberg, who, when he tried to execute any motion, either by his own desire, or at the direction of somebody else, always did the very contrary. If he wished to cast his glance to the left the eyes were turned to the right, and *vice versa*. When he wished to look up, his eyes were cast down. In all the voluntary motions of the body the man assured his physician that the execution was exactly the opposite of what he had conceived and intended. It is difficult to explain this singularity, in which the mind seems to have lost the proper direction of the machinery of the human body.

In some instances on record the patients used words in a wrong sense, or substituted one word for another in copying writing. Occasionally they go on blundering in this way without being aware of it, as in the case of the lady mentioned by Trousseau.† She was the mother-in-law of a French physician. "A visitor comes in, she rises to receive him with a gracious manner, and motioning him to take a seat, says 'pig, animal, sorry brute.' 'Madame desires you to be seated,' added her son-in-law, interpreting the meaning of the patient so strangely expressed." Trousseau observes that "the actions of this lady seemed to be sensible enough, and what was wonderful and not usual with aphasics, she did not appear to be put about, or to understand the offensive nature of the words which she used."

PART II.—THE RELATION OF WORDS TO THOUGHT.

Man is not only distinguished from other animals, as *μέροψ* or voice-dividing, but his superior intelligence is shown by the discriminating way in which he uses and reasons from the impression of his senses as well as by the astonishing complexity of the muscular motions which he learns to execute. In fact the human frame would be much too refined and complicated an instrument for a creature of inferior intelligence.

* "Correspondenz-Blatt der Deutschen Gesellschaft für Psychiatrie und gerichtliche Psychologie," November, 1874.

† "Clinique Médicale," Tome deuxième. Paris, 1868, p. 644.

The hand alone, without the capacity of using tools, would be in many respects an inferior possession to the claw of a wild animal.

But even the most skilful exercises of the human frame are the repetition of processes done by others, or the result of imitations of existing models. It is not man alone that does great things, it is men acting together, and this is done through speech. What we see in language is the tendency or habit of associating our ideas with certain sounds or other symbols in obedience to a powerful impulse, and for this purpose the voice is used as naturally as the arm for striking or the feet for walking. Had man not been furnished with a voice, or been unable to hear, we should no doubt have had some such contrivance as a figurative language like that of the deaf and dumb. There is no difficulty in seeing that the sounds agreed upon to symbolise certain meanings have no natural relation to these meanings. Sounds quite different are used by people of foreign speech, and the construction of languages, though always bearing a necessary relation to human thought, is very various.

"Such, in truth," says Renan,* "is the richness of the resources of the human mind that there is absolutely nothing in common between Chinese and Sanscrit, the two languages which differ most, save one thing, the end to be attained, that is the expression of thought. Chinese attains this end as well as the grammatical languages, but by entirely different means."

But although a word has no necessary relation to a thought, when we have once learnt to associate them together, the connection appears inseparable. When we hear the word the thought comes, when the word arises in the mind the thought follows, so that it is scarcely to be wondered at that a philologist like Max Müller, who has spent his life in examining words, should believe that they could never be dissociated from ideas, and that a man cannot reason without words. When one takes up this view it must be very difficult to make him part with it. To find thoughts in the mind without words

* "Origine du Language." Paris, 1858, p. 217.

requires a subtle mental examination; and how can we show this to another mind save by presenting the thought in words? How much people could think without words on subjects in which we are wont to use words, is impossible to say, because the experiment has never been tried, at least under conditions in which we could learn the result. If a man existed alone and solitary, interpreting his sensations without seeking to communicate his thoughts or his feelings, battling with the powers of nature, and contending with inferior animals, he might then use reason without language; he would no doubt gain experience, and show sagacity in providing for his wants or avoiding hurt and danger. But this is a pure speculation. Such a man is unknown, and the moment he would be found by another man language would begin. Speech is, if not an indispensable method of arriving at any high mental endowment, at least too direct and obvious a one ever to be dispensed with, and it is only in the lowest grades of human intelligence, or in those rare cases where sight and hearing are destroyed from infancy, that we find it wanting.

As a general rule idiots of low intelligence cannot speak. They may possess ideas apparently sufficient to allow them to use a few words, but as we see in normal children, intelligence must be somewhat more matured than this before the gift of speech appears. You must not expect a word to fit every idea; there must be a certain accumulation of ideas before any words are uttered. With this limitation it may be said that these idiots remain mute because they have no ideas which demand expression, and that they speak in proportion to their intelligence. Where the intelligence is feeble, the desire to speak is small, and where the intelligence declines, as in dementia, speech is sometimes given up long before the diminution of the intelligence seems to warrant its cessation. There is a large proportion of imbeciles who can understand what is said to them without being able to say anything. Out of the imbecile children admitted into the Larbert Institution, about 20 per cent. understand speech more or less, but do not speak. Occasionally idiots who cannot speak can hum tunes correctly. Though they do not know the relation of

words to their thoughts, they have seized upon the harmonious relation of sounds to one another. This confirms the view that the word centre in the brain is different from the sound centre. Occasionally it happens that imbecile children who can understand speech, but who have never uttered a word, have a good deal more intelligence than those who can speak. In these aphasic idiots words must exist as remembered sounds.

Sometimes, under unusual stimulus or emotion, these mutes utter a few words; but the power of speech dies away with the momentary impulse that called it into play. Sometimes the approach of death causes a few words to be uttered. Of this there is a new example in the 19th Report of the Eastern Counties Asylum for Idiots and Imbeciles. Mr. Millard writes—"A boy was here for several years who had not been known to speak until a few hours before his death, when he uttered several intelligent sentences; another was suddenly roused to speech by an unexpected circumstance, and afterwards he continued to speak."

Dr. Adriani* tells us of a case which occurred in his Asylum. An idiot of eighteen years of age had remained depressed, and, as it were, stupified from infancy, and who uttered no other word than "mamma." Having taken typhoid fever, his look became more lively; the expression of his physiognomy changed, and his mind expressed an unaccustomed vivacity. He spoke in an animated manner of what he suffered, and after recovering from the fever, from being sad he became gay, and he was able to express his ideas in varied words, to learn and sing songs, and to keep in remembrance the names of things and of persons.

Dr. Adriani cites a number of instances where insanity disappeared after typhoid fever. He considers that by the excitation of a new morbid process the blood supply and nutrition of the brain are probably modified.

Dr. Wigan† gives a case of the sudden excitation of speech

* "Relazione Statistica Clinica del Frenocomio, di S. Margherita di Perugia per gli Anni, 1874-1875-1876, del Medico Direttore Roberto Adriani."

† "The Duality of the Mind," London, 1844, p. 377.

almost as wonderful as the well-known story of the son of Croesus:—"An export merchant in the present day, whose immense establishment is one of the most conspicuous and remarkable in the city of London (and who consulted me professionally many years), had a son, about eight years of age, perfectly dumb, and the family had abandoned the hope that he would ever be endowed with the gift of speech. There was no defect in intellect, nor lesion of any other faculty. In a water party on the Thames, the father fell overboard, when the dumb boy called out aloud, 'Oh, save him! save him!' and from that moment spoke with almost as much ease as his brothers. Two of my intimate friends were present at the miracle, which was the subject of unbounded joy and congratulation. The young gentleman is now one of the most active and intelligent members of his father's firm."

Wiedemeister * cites the instance of a bride who, on rising from the wedding breakfast to go away with her husband, became speechless, and remained so till she was moved by the sight of a burning church to call out "fire," and from that time she again had the use of words. So few of these stories are recorded, that one feels tempted to believe the desire of exciting wonder must have coloured the narrative, but such cases have their analogies in sudden recoveries from paralysis of the limbs. Probably the injured nervous centres or conducting tract have for some time recovered their lost capacity, but through disuse and wasting do not resume their functional activity till stimulated by some sudden mental excitement or electric shock, when they respond with a start, and afterwards continue to act.

Assuredly persons who, without being deaf or imbecile, yet cannot speak, are not often met with. Some instances are mentioned by Sir William Wilde,† amongst others a boy in the City of Dublin whom he had often examined:—"He is neither deaf, paralytic, idiotic, nor deformed. He is intelligent, and understands what is said to him; but his manner is

* "Die Störungen der Sprache: Versuch einer Pathologie der Sprache," von Dr. Adolf Kussmaul. Leipzig: 1877, p. 201.

† In his "Aural Surgery and Diseases of the Ear." London, 1853, pp. 465-7.

excited, and he has a peculiar anxious and restless look, and is rather irritable, and very intolerant of restraint. The organs of speech are well formed, as are also those of hearing, so far as can be observed, but he makes no attempt at articulation, or the pronunciation of words. When he wishes to attract attention he utters a loud, sharp, bark-like sound."

Dr. Walsh of Ballinakill thus described a man aged twenty : — "He is completely dumb, seemingly not capable of giving expression to even inarticulate sounds, his hearing is acute and correct, and he is in no way guided by observing the lips of the speaker; he is an intelligent, well-formed, agricultural labourer; his tongue appears shorter than natural, and he cannot protrude it beyond the lower lip, but can move it from side to side with freedom; he has no cerebral disease." Of course a person who, though mute yet can hear, has a great advantage over a deaf-mute in acquiring knowledge.

The condition of uneducated deaf mutes often nearly approaches that of a being destitute of language. It is true that even if they are not taught signs they contrive a few of their own invention; but these signs are of a very simple kind, and neither fitted nor intended to express any abstract notions, so that the deaf and dumb are in a much worse condition for obtaining knowledge than the blind. The deaf mute sees everything, but understands nothing; whereas in using the senses still remaining to him the blind man is guided by the words of others into true interpretations. We thus find that the deaf and dumb in the narrow circle of their own cogitations are in a very benighted condition, but it would be absurd to say that they do not possess or exercise reason. After they have become educated and are able to communicate by signs or writing, deaf mutes sometimes detail what they remember of the bounded state of their intellect before being sent to school. They record accidents and events which have made an impression on their mind; but it is clear that their speculations upon the nature and causes of things have never gone below the surface. In the Reports of the American Asylum at Hartford, there are a number of answers to questions put with a view to find out what were the thoughts of uneducated deaf mutes. One of

them when asked, What did you formerly think when you saw a person die ? replied that he thought "he was deceiving the people, and that he would rise up." He thought that "a man that was dead was buried alive, and wondered that he did not rise from the dead in a few days." Other deaf mutes by observing that the dead bodies of animals rotted away, arrived at a nearer idea of death. They rarely thought that they would die themselves, and an existence beyond the grave occurred to none. Many attended public worship for years without knowing what was the object of it.

In regard to the origin of men and animals we are told in the Forty-sixth Annual Report, they were found not to have reflected much, if at all. One or two seemed to have formed the opinion that the world had always existed, and that there had always been a succession of the beings inhabiting it; while most of them had not given a single thought to the subject. The following quotations are taken from their answers to the question on this point :—

"I never attempted to suppose who made the world, nor how it came into existence." "I had no idea of the beginning of the world nor of the beings it contained." "I knew nothing concerning the origin or the beginning of the world." "I had never reasoned about the origin of the world." "I had thought that the world and beings were always the same." "I believe I used to think that this world stood itself always, and that the people too were descended from generation to generation without origin."

As has been already observed, it is too hasty an assumption that the mind can only attend to one object or mental process at once. In some states, such as in reverie or dreaming, or where great concentration of mind is used, the whole attention may be lavished upon one subject ; but in general there are a number of parallel acts of consciousness going on. We have a more or less vivid sense of our antecedents, our position, of the lapse of time, and other accompanying circumstances. We do not remember, or at least quickly forget all our parallel acts of consciousness, our memory generally running back along that line to which we have paid the most attention. We can carry on two distinct

mental processes much more easily than two similar ones. Thus we can go on thinking and riding, or thinking and skating, better than thinking on two subjects at once. We can remember the words of a song and the music at once, and go on dancing at the same time much more easily than remembering the words of two songs at once. Occasionally, I have succeeded in attending to two parallel lines of thought, and what is more difficult, in recalling them to memory. Once when reading a French book, some one addressed me, when I both listened, answered, and at the same time went on reading the book. On interrogating my memory, I found that I could recollect both what I heard, what I had answered, and what I had read. It would appear that this faculty of attending to many things at once or seeing several things at a glance can be increased by practice.

“Robert Houdin relates, in his autobiography, the mode in which he prepared himself and his son for the performance of the trick which he termed ‘second sight;’ the success of it mainly depending upon the rapidity with which the information given by sense-impressions could be apprehended and interpreted, and the accuracy with which (for a short time at least) they could be remembered. In the first instance Houdin put down a single domino, and required his son to name the total number of points, without counting them, which each could readily do. Two dominoes were then tried, and after a little practice, the total number of points on both was correctly named by each at the first glance. The next day the lesson was resumed, and they succeeded in naming the points on four dominoes at a single glance; on the following day those of six; and at length they found themselves able to give, without counting, the sum of the points on twelve dominoes. This result having been attained, they applied themselves to a far more difficult task, over which they spent a month. The father and son passed rapidly before a toy shop, or any other displaying a variety of wares, and each cast an attentive glance upon it. A few steps farther on each drew a paper and pencil from his pocket, and tried which could enumerate the greater number of the objects momentarily seen in passing. The son sur-

passed the father in quickness of apprehension, being often able to write down forty objects whilst his father could scarcely reach thirty; yet, on their returning to verify his statement, he was rarely found to have made a mistake." *

This accomplishment was utilised in persuading people that the son possessed the gift of clairvoyance. It may be said that the mind passes very rapidly from one object of attention to the other, and that we thus mistake processes which occur successively for processes which occur simultaneously, though if these processes appear simultaneous, the presumption surely is that they are so till this is disproved.

We can remember words both as sounds and as symbols; the latter is a double process, in which we remember the word and the idea too. Sometimes the word fails to recall the idea, or the idea fails to recall the word; and sometimes we have ellipses of thought without words. In general, however, the word forms the link between the object and the memory of it. There is a remarkable mnemonic power in speech. Thoughts unassociated with words very soon die away from the memory. Even intense feelings, when never expressed, are soon forgotten.

There is no doubt that speech powerfully supports thought. Our words are definitions which contain ideas more or less generalised and common to different minds. We thus learn to fix our own ideas, and to follow the order of the thoughts of other men, so that we can build up conclusions from one stage to another and go back to examine what we have done. In arranging words, like builders erecting a tower, we lift the materials which in turn elevate us to a higher position. With ordinary men, educated through words, it is easy to see that there must be a great difficulty in carrying on a train of abstract thought without symbols, whether spoken or written words, figurative signs like those of the deaf and dumb, or ideographic characters like those of the Chinese. At the same time, when some writers pronounce that we

* Quoted in a lecture on "Modern Spiritualism," by W. J. Marshall, M.D., Greenock.

could have no abstract ideas without words, I cannot even pretend to understand what they mean. A child recognises that one colour is common to snow, milk, the lily, a piece of paper, and to a bit of chalk. Can he not hold this in his mind without the word white, or albus, or blanc? Is it not clear that though men cannot communicate their abstract ideas to one another without words, that the idea must be gathered in the mind before the mind recognises it, so as to give it a distinctive name, just as a flower must be known to the sight ere it is labelled with a title? Imbecile children often recognise and separate colours and short numbers before they know their names. Perhaps people may somewhat overlook how much abstract ideas enter into our daily life. One cannot spend a shilling in buying different articles without having recourse to abstract notions.

Jessen * remarks that "the greatest thinkers, as was the case with Newton, can so bury themselves in their own thoughts that they neither see nor hear what is going on before them. They think, no doubt, in such moments without words, which only arise when, through reflection, they have arrived at a result. On this account his biographer assures us Newton could give no account of the manner and way in which he had arrived at the results of his thinking, for we remember our own thoughts and their course only by means of the words by which they are represented."

It seems possible that a very superior mind might gain now and then in dealing with ideas unrepresented by symbols, but this assuredly is not the ordinary course of thought with ordinary men.

No doubt words sometimes impede thought, as language not copious enough, and of inferior construction and cultivation, and full of ambiguous phrases or equivocal inflections, leads men into illogical paths. Moreover, all speech tends to lead men from what is particular and incommunicable to what is felt in common and can be easily described. Therefore our attention is powerfully drawn from the subjective to

* "Verhältniss des Denkens zum Sprechen, Allgemeine Zeitschrift für Psychiatrie." Band xxii., p. 366. 1865.

the objective, and we cease to think of what is difficult to express in words. Thus speech, while it leads the mind to some things, may lead it away from others.

While running alongside with speech there are occasions in which thought asserts its distinctness. We elaborate ideas, but find that we cannot express them in words; we think of persons or things, we have the conception in our mind, but the names and the words do not come; we propose one expression after another, and reject them successively, till our memory supplies the word or combination of words of which we are in search, or perhaps, after groping for a while, we abandon the attempt to clothe our meaning in words till we are in a happier vein or we find what expresses our ideas in the works of some master of language. Men coin words or adopt them from foreign tongues, and if they express ideas not already fitted by suitable symbols, they soon fall into common use.

In some minds there seems to be a disparity between the power of thinking and the power of expressing thoughts. Men who approach close to a subject and bring out new views sometimes have a great difficulty in stating their thoughts in words. John Hunter is a memorable example of a man of this type. "One of the few intellectual defects that can be traced in him," says Paget, "was the great inequality of his powers of language and thought. In every mind thoughts and words are so interwoven that each shares always the qualities of the other. Thoughts and words are like mutual reflectors: if either of them distorts an object placed between them, the other cannot but receive the distorted image and reflect it. Or each is, alternately, master and servant. Now, thought employs words for its expression, and then these same words take part in directing the next thoughts. If either be defective or erroneous, the other suffers.

"Hunter was a great master of facts, and in plain and customary English he could with great power collect, compare, arrange, and construct whatever could be made from them; but he was not a master of words. His large, strong mind does not in anything show that subtilty which, whether in

thinking or in writing, can accurately employ many words of scarcely different meanings—a quality which is very necessary for the consideration of abstract ideas, and in which a defect is a hindrance, not only to the expression of thoughts, but to the process of thinking.

“Hunter’s defect in this respect may have been due, in part, to his neglect of early education, but chiefly, I think, it was natural. In many other things he corrected all the faults that could be referred to neglected education; in language, whether in speaking or writing, he was, to the last, deficient; and his thinking power, strong as it may have been by nature, was hindered and baffled by its weak associate.”*

Hunter’s knowledge was of a thoroughly real character: he did not think through the thoughts of other men, but interrogated nature closely. Perhaps this was one of the reasons he hesitated in words. With so many gaps in his knowledge as one must feel who deals with nature as an investigator, with so many unsatisfied questions in his mind, he might hesitate at accepting ordinary words as definitions, for no true thinker is ever satisfied with words as most men use them.

The study of aphasia has already thrown much light not only on the physiology of the brain, but upon the mental characteristics of speech; and as cases accumulate, and are more carefully analysed and compared, we may expect to learn more. Often the record of interesting cases has been neglected or rendered of dubious value by the want of the preliminary knowledge requisite to examine an aphasic so as to bring clearly out the distinctive failings. To enlarge upon the subject at present would take up too much room, but I am unwilling to conclude without alluding to the confirmation derived from aphasia of the principles laid down in this article.

Dr. J. Hughlings Jackson states a view shared by Bain and Ferrier, “that when we remember a word there is faint excitation in the highest centres for articulatory movements; when we remember, and also say that word aloud, the excitation is stronger, and currents spread down to lower centres

* Paget, “Hunterian Oration,” 1887, p. 18.

of movement, and these reach the articulatory muscles." The tendency to add gestures to speech is, in some persons, too strong to be resisted. We have seen that as some imbeciles understand speech without speaking themselves, their language may consist purely of remembered sounds. Probably normal speech is made up of remembered sounds, the excitation of motor articulatory processes, and the mental recognition of such excitations. At any rate, we know that, by a destruction of a small part of the brain, the under surface of the third left frontal convolution, where it overlaps the island of Reil, a man may be suddenly deprived of the power of speaking.

There are a great many varieties of aphasia, and the investigation of these varieties will probably soon add an important chapter to psychology. Even now no one has a right to be called a psychologist at all, who does not know what has been done by observations in this disease towards the analysis of the faculty of speech. The disorder has been divided into two forms, motor or ataxic aphasia, and amnesic or sensory aphasia. In motor aphasia the movements of the tongue and other parts of the vocal apparatus are not paralysed, though there is often a greater or lesser amount of hemiplegia on the right side; the power of speaking is lost, but the patient can understand what is said to him, and can read. The power of writing is lost with that of speaking, save in those rare cases in which the patient can still trace words which he can no longer utter. A noteworthy instance of this form of motor aphasia is to be found in the life of Lord Denman, who, when seventy-three years of age had a stroke of paralysis which affected his right hand. To use the words of his biographer:—*

"It was on 2nd December, 1852, that this strange and terrible affliction befell him—strange as well as terrible, for it had this peculiarity about it, that while he retained his intellectual and emotional faculties almost unimpaired, his powers of communication with others by writing as well as by speech, were absolutely and entirely taken from him. He could frame written letters with a

* "Memoir of Thomas, First Lord Denman, formerly Lord Chief Justice of England," by Sir Joseph Arnould. London, 1873, vol. ii., pp. 338-9.

pen, he could readily distinguish one ivory letter from another when ranged in lines before him, but to form these letters into words, or words into sentences, was utterly beyond his powers, unless the words and sentences were written, or put together as a model for him to copy from. When he had received letters—the only way he could acknowledge them was by copying in a sort of formal print hand any passage in them that had particularly pleased him, and causing that to be sent to the writers, in token that he had read and been pleased by their communications.”

He soon learned to write very tolerably with the left hand, but “it was found that he could *originate nothing*, and when some deeds were sent from England for his signature, he could only sign his name by seeing it written out and copying it.” And yet his mind was as clear as ever to receive impressions. He could read, and could clearly understand everything that was either read or said to him. Law reports, debates in Parliament, &c., interested him as much as ever, and he showed by his countenance and by signs that he not only appreciated fine passages, but that he perfectly understood controverted points, and could he have expressed himself, was as capable as ever of deciding them.

As a general rule, the harm done to the integrity of the mind in aphasia is greater than in Lord Denman's case. In most aphasics the power of reading is destroyed along with that of speaking, and there is more or less diminution or confusion in the memory of words.

The material lesion of the brain is not always fixed to one spot; but, in the great majority of aphasics, it is situated in the left side, and near the operculum or the island of Reil. Dr. Ferrier's experiments by the electric excitation of the brain show that movements of the lips and tongue may be aroused by the application of the electrode to analogous parts of the brain in monkeys, dogs, and other animals.

In sensory aphasia, though the hearing is good and the general understanding is well preserved, the patient can no longer comprehend heard words or read or repeat what is said to him. He thus cannot read aloud or write to dictation, but he still retains the power of speaking what he conceives in his own mind, which he could not do in motor aphasia. He can

compose and write a letter, and copy writing. This affection sometimes goes by the name of word-deafness. Seppilli, searching through European medical literature, has lately collected twenty cases. When the deprivation is confined to word-deafness alone, the material lesion is found to be limited to the first and second temporal convolutions of the left hemisphere. It is therefore a lesion confined to the left side of the brain occupying the part in which heard sounds are believed to be transmuted into verbal images. It is sometimes complicated with motor aphasia, and generally the mind is more or less weakened.

There are great and often perplexing varieties in the mental deficiencies attending aphasia, dependent, no doubt, upon the varying situation and extent of the brain-matter injured by disease, and also by the other side of the brain taking up the impaired function of its fellow. One of the latest, as well as one of the most ingenious of the explanations of the varieties of aphasia will be found in an essay in *Brain* (part xxviii.) written by Dr. Lichtheim, and translated by Dr. A. de Watteville. Two observations bearing on our inquiry may be here briefly mentioned. Dr. Broadbent has pointed out cases in which, "with complete loss of speech for all other purposes, there was associated remarkable power of saying numbers. The patient could count up to twenty or more, and would at once give accurately the number of shillings shown to him, either by speech or writing, and in some cases the number would drag after it the word shillings. A man who could under no other circumstances say the word shillings, would say it after the number two or three."

I once had an opportunity of examining an aphasic at Glasgow, a patient of Dr. Gairdner's. His right arm was paralysed. He could not speak, but could understand a little of what was said to him. He could play at dominoes. He was not able to read numbers when written out like thirty-seven, or in Roman numerals xxxvii.; but could read Indian numerals 37, and add them 4217

8342

12459

He detected the mistake I purposely made of 4 instead of 5 and corrected it. His age was 32; when I put it down as 42 he expunged the 4.

Observers have been surprised to find that sometimes particular words or letters cannot be pronounced, and it has been specially remarked that names or nouns in general are more often forgotten than verbs, adverbs, prepositions, conjunctions, and other parts of speech. The explanation afforded by Kussmaul is worth quoting. "The more concrete the idea the earlier the words denoting it disappear from a failing memory. The reason of this is that mental images of persons and things are more loosely connected with their names than abstractions of their conditions, relations, and properties. Persons and things easily present themselves to us without their names. The sensory representation (*Sinnenbild*) is more clearly realised than the abstract idea (*Sinnbild*) or the name, which gives little assistance to the conception of persons or objects. We gain abstract ideas only with the help of words, which alone give them a sure form. On this account verbs, adjectives, and pronouns, and still more adverbs, prepositions, and conjunctions, have a much more intimate relation to thought than nouns."

There are cases of aphasia in which all the intellectual powers, save those concerned in the utterance and reception of words, seem to be left unaffected. The patient can use all his senses, act intelligently, play at cards, draughts or dominoes, and in other ways show powers of foresight and calculation.

Trousseau had a patient who was seized with aphasia while he was sitting at whist; he played with his usual ability, and noticed nothing amiss till the game was over, when he found that he had lost his speech. A little after it was ascertained that he was unable to follow the words in a book. The application of leeches caused the aphasia to disappear, when he was able to explain what he had experienced.

Dr. Lordat, a distinguished Professor of Medicine at Montpellier, after a fever suddenly lost for several months the power of speech. So thoroughly was the memory of words destroyed that he did not understand a single word said to him. But he tells us that he could combine abstract ideas, and distinguish them properly, without having any word to

express them, and without thinking at all about their expression. "I experienced," says M. Lordat, "no embarrassment in the exercise of thought. Accustomed for so many years to the work of instruction, I was able to arrange in my head the principal propositions of a lecture, and to find no more difficulties in the changes that I chose to introduce in the order of my ideas." Trousseau has stated his conviction that Lordat was labouring under an illusion, and that the intellectual faculties of the learned professor had in reality suffered more than he was aware of. Trousseau remarks that before the attack of aphasia in 1828, Lordat delivered his lectures in an admirable manner without any notes; but, after the cure of the attack, he could not even deliver from memory the lectures already written out, having always to read them off from the manuscript. Trousseau argues from this that Lordat's intelligence must have been profoundly altered, and his strictures are re-echoed by Kussmaul.* But it might be replied that the fact that Lordat had to read his lectures only proved that the power of expression was permanently injured, which may be granted without affecting the argument. Kussmaul's observation that Lordat had already accumulated a rich store of ideas through language is more to the purpose. That thought should be carried on under increased difficulties, when disconnected with words is what might be expected; but we have so many attestations from aphasics that they could observe, reason, and reflect while words were wanting, that we may confidently appeal to the results of the study of disordered conditions of speech following disease of the brain for a confirmation of our views. In reading over papers on aphasia, we have occasionally been struck by apparent incongruities of thought, and would have liked to be able to ask a few questions of the authors. For example, do these learned anatomists hold that all thoughts, or at least all abstract ones, come into being in one small corner of

* *Op. cit.* p. 20, 21. Dr. Augusto Tamburini, in his able "Contribuzione alla Fisiologia et Patologia del Linguaggio, Reggio-Emilia," 1876, after referring to Lordat's case, observes: "It is evident that verbal formulæ are not absolutely necessary to the exercise of thought, especially when it occupies itself with the objective and the concrete."

the brain, in the first and second temporal convolutions or the flap end of the third frontal, away from the central parts of the great hemispheres, and out of the direct line of the conducting tracts? What function is left to the rest of the left hemisphere? Has the right hemisphere nothing to do with abstract ideas? Or, if it requires to get its inchoate abstractions something better than "automatically registered," is it obliged to get them passed over to the left side of the brain to be finished off by the end of these three gyri, the true seats of all abstract thought?

I do not profess to have completed a survey of the subject, which has still its obscure questions; but in assigning a more limited rule to speech, I think that there is an accordance between mental analysis and anatomical and physiological data.

Speech is an endowment peculiar to a high intellect. This is the reason why animals cannot speak or use similar means of communication. Their intellect, though the same in kind as ours, is so inferior in degree that they have never arrived at such maturity of thought as to fit them to begin language. At the same time, it cannot be denied that the intelligence of some animals has enabled them almost to reach this faculty. There is no impassable line between a mute intelligence and one possessed of speech, as Max Müller has maintained and as Bateman has argued in his work, "Darwinism tested by Language." We find the rudiments of language in the higher animal; dogs undoubtedly understand words. It is true the best educated collie only understands a few, but multiply his intelligence in degree without altering it in kind, and he will understand more. Dogs even make attempts to communicate feelings and occurrences which move them deeply. Moreover, they may be taught to understand gestures more readily than words, and, of course, this is a kind of language. Though I knew that the parrot was a very intelligent bird, I always thought it a piece of simplicity to believe that it could understand what it says till the appearance of "Notes from the History of My Parrot,"* by Dr. Samuel Wilks. Consider the following passage:—

* *Journal of Mental Science*, July, 1879.

"Having at night found her awake, and having said, 'Go to sleep,' if I have approached the cage after dark, the same words have been repeated. Then, as regards objects, if certain words have been spoken in connection with them, these are ever afterwards associated together. For example, at dinner-time the parrot, having been accustomed to have savoury morsels given to her, I taught her to say 'Give me a bit.' This she now constantly repeats, but only and appropriately at dinner-time. The bird associates the expression with something to eat, but, of course, knows no more than the infant the derivation of the words she is using. Again, being very fond of cheese, she easily picked up the word, and always asks for cheese towards the end of the dinner course, and at no other time. Whether the bird attaches the word to the true substance or not I cannot say, but the time of asking for it is always correct. She is also fond of nuts, and when these are on the table she utters a peculiar squeak; this she has not been taught, but is Poll's own name for nuts, for the sound is never heard until the fruit is in sight. Some noises which she utters have been obtained from the objects themselves, as that of a cork-screw at the sight of a bottle of wine, or the noise of water poured into a tumbler on seeing a bottle of water. The passage of the servant down the hall to open the front door suggests a noise of moving hinges followed by a loud whistle for a cab.

"It will be seen that the bird associates words or sounds with objects, and where the right names have been taught it, she may be said to know their names; and more than this may be observed—the bird invents names, and the names gathered from a particular sound."

Granting the accuracy of these observations, and a more trustworthy observer than Dr. Wilks could not be found, one is constrained to admit that the parrot has shown that she is really possessed of a rudimentary faculty, not only of speaking, but of real language.

PAPER XI.

LEFT-HANDEDNESS AND RIGHT-HEADEDNESS.

MY attention was directed to the subject of left-handedness by a series of articles by the late Mr. Charles Reade. The view advocated by this writer was that naturally the left hand is as readily used as the right, but inveterate custom has led men to give an arbitrary preference to the right as the hand which used the sword, while the left was condemned to bear the shield. He attributes the comparative awkwardness with which the left hand is used to the great care which women take to accustom children from infancy to employ the right hand in all difficult operations which require only one arm for their use. Certain it is that infants seem at first to use both hands indiscriminately, and the one arm seems to be at first as well developed as the other, though in process of time the right arm gets more muscular than the left. It is possible that man was originally ambidextrous, as Dr. Sigerson*

* "Consideration of the Structural and Acquisitional Elements in Dextral Pre-eminence, with Conclusions as to the Ambidexterity of Primeval Man," by George Sigerson, M.D. Dublin, 1884. See also "Die Schrift, Grundzüge ihrer Physiologie und Pathologie," von Dr. Albrecht Erlennmeyer. Stuttgart, 1879.

In Judges iii. 15 and xx. 16, left-handedness is mentioned as a peculiarity. See also Psalm cxxxvii. 5. Some of David's mighty men could use both the right hand and the left in hurling stones and shooting arrows out of a bow (1 Chron. xii. 2).

Homer, "Ilias," lib. xxi. l. 162, describes Asteropæus as ambidextrous. He throws two spears at once, and slightly wounds Achilles with one.

ὁ δ' ἀμάρτη δούρασιν ἀμφὶς
"Ἡρῶς Ἀστρεοπαῖος, ἐπεὶ περιδέξιος ἦε.

"At once Asteropæus discharged each lance,
For both his dextrous hands the lance could wield."

Pope's Translation.

has argued ; but, in my opinion, he has failed to prove that this was the case within the time of which we have any record. He tells us that "Dr. Erlenmeyer quotes passages from the text of the Old Testament emphasising, as he considers, the left-handedness of the Hebrew race." Dr. Sigerson has apparently been misled by the summary of Dr. Erlenmeyer's treatise upon which he depends. All that Dr. Erlenmeyer quotes is an obscure passage in the Talmud that some religious inscriptions should only be written with the right hand, upon which he founds an inference that the ancient Hebrews were left-handed. Had he studied the Old Testament he could easily have found that left-handedness is alluded to as a peculiarity.

In all the ancient writings, it is clear that men gave the preference to the right hand as they do now. The story of Vasco da Gama finding the inhabitants of Melinda to be all left-handed, quoted from Horne Tooke's "Diversions of Purley," I believe to be one of the many fables of the early Portuguese travellers.

Marro and Lombroso have found that in Italy a larger proportion is ambidextrous amongst the insane and criminal classes than amongst normal people.

After two careful inquiries,* I found that with imbecile children about 11 or 12 per cent. were left-handed, and that amongst 158 children at an ordinary school about 12 per cent. were left-handed. From this it appears that left-handedness is not more frequent with imbeciles than with ordinary children. But the imbeciles were much more decided in their left-handedness, generally using their left hands for all purposes ; and there was a class as large as the left-handed who used both hands indiscriminately. So if there were no more imbecile children decidedly left-handed, there was a much smaller percentage of children decidedly right-handed ; for while of the normal children 88 per cent. were right-handed, of the imbecile only 72 were decidedly right-handed.

As idiot children are much less tractable than other children, and it is much more difficult to teach them to use their limbs properly, these results would likely be considered by

* See my "Notes on Left-handedness" in *Brain*, July, 1880.

Mr. Reade as confirming his theory ; and it is difficult to deny that custom has a certain power in inducing all those who have a weak tendency to prefer their left hand, to make use of their right one instead. Some people who have been left-handed in infancy, and who through persevering education have been made to use their right hand for acquired work, still continue to use their left leg preferably to their right ; for example, in kicking, or setting off down a slide.

The fact that all nations and tribes, without exception, have, in all times of which we know anything, given the preference to the right hand, leads us to believe that there must be some natural reason for so doing, independently of arbitrary usage, and various explanations have been suggested.

Anatomists have pointed out a slight lateral curvature of the vertebral column, the convexity of which is turned towards the right side ; and some have attributed the preference given to the right arm to this bend or curve of the right side. It is, however, more likely the effect than the cause of right-handedness, a deviation caused by muscular action, as explained by Bichat. As most persons are disposed to use the right arm in preference to the left, the body is curved to the left when making efforts, as in pulling, for the purpose of giving an additional advantage to the muscles, and enabling them to act with more power on the points to which they are attached ; and the habitual use of this position gives rise to some degree of permanent curvature. In support of this explanation, Beclard has stated that he found in one or two individuals, who were known to have been left-handed, the convexity of the lateral curve directed to the left side. It has been also stated that from the distribution of the great arteries of the head, the left hemisphere and right arm receive a larger supply of blood than the right hemisphere, which moves the left arm. That this is the case is denied by Dr. Sigerson. In this I cannot agree with him ; but whether it be true or not, the learned doctor shows * that the same arterial distribution prevails amongst many animals which show no superior organic

* "If right-handedness in man be due to the fact that one hemisphere of his brain is better supplied with blood than the other—if it be due, in any way whatever, to the mode in which the brachial and cephalic arteries

functional activity on either side, and this argument will be difficult to meet. It is said that a preference to use the limbs of one or other side has been observed with some animals.

Parrots are said to use the right foot more than the left. Some birds, such as the Crane and Ibis, are said to perch habitually on the right foot. Some of the Macaques are said to prefer the right upper extremity. The Aye-aye has been observed to use the left hand in feeding. In repeating these statements I do not vouch for their correctness.

Few of our readers will need to be reminded that the function of each side of the brain mainly crosses over to the opposite side of the body. It is the left hemisphere which moves the right arm and leg; and the right hemisphere which moves the left arm and leg.

The observations of Gratiolet that the left hemisphere of the brain is earlier in its development, so that in a new born child it is a few grammes heavier than the right, might be held to confirm as well as to account for the habitual preference given to the right limbs, only this preference is not noticed in early infancy. On the other hand M. Parrot† who has carefully studied the development of the brain in new born children finds that, in four-fifths of the cases examined by him, the right side of the brain was the most developed, and in only one-fifth of his cases was the left side the most

come off from the aorta, then this conclusion is imperative: in every other animal, if any other there be, in which a similar vascular arrangement is found, there must be a similar exhibition of dextral predominance, or right-handedness. If not, then dextral predominance, or right-handedness does not depend on vascular arrangement. Now, what are the animals which come into the same group with man, when classed by the standard of arterial identity in this region? They are: Monotremata (*Ornithorynchus*), many Marsupials (*Phascalomys*, *Wombat*), the Edentata (*Bradypus*, *Dasypus*), *Hyperoödon*, and Whales, Beavers, Rats, most clavicate Rodents, Seals, Prosimians (*Tarsius*), and the Chimpanzee. To these must be added the Sirenia, where there is merely a wider space between the roots of the off-coming arteries, the arrangement of which remains essentially the same. Now, who will contend that these animals exhibit dextral predominance?" Sigerson on "Dextral Pre-eminence," p. 7.

† *Developpement du Cerveau chez les enfants du premier âge* (*Archives de Physiologie Normale et, pathologique*, 1879, p. 508, quoted by Dr. E. Bérillon, *Hypnotisme Experimental*. Paris, 1884).

advanced. So the question which side is first developed seems still doubtful. Dr. Sigerson has observed that in cases of reduced strength from illness the right hand loses more power than the left.

If the head be carefully examined it will be found that its contour is rarely symmetrical. There is generally a greater protuberance on the left side, a little above or behind the ear, than on the right, the right side being flatter. This would indicate a greater development of the brain on the left side, near the region where physiologists have placed the motor area of the brain. It is easy to take a diminished outline of the head with a conformateur, which is much used by hatters. A very common form of the head is a bulge on the left, behind or above the ear, and a lesser bulge on the right side in front at the angle of the forehead. Thus the greater size of the left posterior region is made up to a certain degree by a bulging on the right anterior angle. It was found that with imbeciles a greater cranial outline on the right side was more common with those who were left-handed; but to this rule there were some decided exceptions. On taking the cranial outline of a friend, I remarked that he ought, from the contour of his head, to be left-handed. He answered that he could use both hands almost equally well, and, as a proof of it, wrote his name upon the profile card with his left hand. He observed that his father had been left-handed, and I have met with other facts which made me think that it is worth while inquiring whether this peculiarity may not be hereditary. Dr. Ogle, who made some inquiries into the subject, states his belief that it is so.

My friend, Mr. Crochley Clapham, to whom I am indebted for the idea of the conformateur, finds that the greater protuberance on the left side of the head, above and behind the ear, was present in 81·771 per cent. of the insane.* Mr. Clapham also observes that the numerical superiority of the "left-headed" agrees with observations made by numerous writers on the greater relative weight of the left cerebral

* See "The Cranial Outline of the Insane and Criminal," by Crochley Clapham, L.R.C.P., &c., and Henry Clarke, L.R.C.P., &c., in the West Riding Asylum Reports, vol. vi., p. 154.

hemisphere. That it has an obvious, though by no means exclusive, connection with right-handedness is shown on comparing the criminal tables, where the opposite state of right-headedness was exhibited in a number of left-handed individuals." Some may hold that this one-sided development of the brain is really the consequence, not the cause of right-handedness, that just as the right arm becomes stronger and more muscular than the left by constant use, the corresponding portion of the brain also takes an increased development.

The view that the habitual preference of the right arm really arises from a greater or earlier innate power in the left hemisphere, seems strengthened by the well-known facts of aphasia, and the physiological experiments confirming and illustrating them.

On the left side of the brain, in the lower part of the third frontal convolution, or in the operculum, which lie behind and above the cavity of the eyeball, is situated what has been called the speech centre, where motor acts of articulation take their origin. On the destruction of these parts on the left side, the power of initiating words is lost, though the aphasic patient generally understands words. As the utterance of words requires the combined action of both right and left muscles of the vocal apparatus, it is clear we have here a fair case of one-sidedness in the hemispheres, which can only be denied by denying that, in most cases of aphasia, the lesion is on the left side, and that it is often associated with paralysis of the right arm. This left-sidedness, at anyrate, is beyond the reach of mothers and teachers.

Dr. Broadbent has shown that in hemiplegic paralysis—*i.e.*, paralysis of one side, there is most injury to those actions which are habitually practised by the limbs of one side, and that actions done by both sides at once are much less interfered with. But motor aphasia, the loss of power of initiating the articulation of words, distinctly goes with one sided paralysis, and is dependent upon an injury to one side, generally the left side of the brain. Thus the superior activity of the left side of the brain in guiding the right hand is conjoined with a superior share in setting in action the muscles of the vocal apparatus.

Dr. Ferrier observes in his book "On the Functions of the

Brain :” “As regards the articulating centres, the rule seems to be that they are educated, and become the organic seat of volitional acquisitions on the same side as the manual centres. Hence as most people are right-handed, the education of the centres of volitional movements takes place in the left hemisphere. This is borne out in a striking manner by the occurrence of cases of aphasia with left hemiplegia in left-handed people. Several cases of this kind have now been put on record.”

An instance is given by Dr. Hughlings Jackson, who adds : “It is admitted that these are cases of left hemiplegia with aphasia in persons who are not left-handed.” In such cases we must suppose the main articulating centre to have been in the right hemisphere without inducing the motor centre of the left arm to take the lead. This seems to prove that the connection of sequence or concomitance between the education of the centres of articulation and manual exertion in the same side of the brain is, at least, not inseparable.

As already mentioned, in other convolutions (the first and second temporal gyrus) is situated the area of grey matter where heard words are believed to be realised as mental images. When this portion of brain is destroyed, people lose the faculty of apprehending the meaning of words though they hear them quite well and the understanding in other respects remains unimpaired. This constitutes the disease called sensory aphasia or word deafness. What is striking in all the cases observed, the lesion was on the left hemisphere of the brain. What function is left for the corresponding portions of the right hemisphere is not so clear. It has been thought to follow the lead of the left side, to reinforce its action, and even to assume it, though slowly when the other side is destroyed.

Dr. Westphal* had a patient who exhibited various symptoms of a tumour in the brain. This man's mental condition was carefully studied during the eight and a-half months he was in the Charité Hospital of Berlin. He had no

* “Separat - Abdruck aus der Berl. Klin. Wochenschrift,” 1884. No. 49.

aphasia whether sensory or motor. After death, the whole of the temporal lobe on the left side was found to be destroyed or disorganised by a large tumour.

Judging that theoretically, the lesion should have been accompanied by sensory aphasia; the learned professor made inquiry whether the patient were left-handed. The man's wife stated that he had been left-handed from childhood, and that, though he had been taught to write with the right hand, he used the left for all actions demanding strength and skill. Dr. Westphal cites a similar case from Kussmaul. In these two persons it is supposed that the specialisation of the speech faculty was in the same side of the brain as that of their manual skill. The men were both left-handed, and in action and speech led off from the right brain. This explains why destruction of the left temporal lobe was not attended by any disturbance of speech.

The left hand has some important offices to perform. It is the hand which holds the reins both in riding and in driving. It is frequently used in dealing cards. Trousseau has remarked that the right and left sides are subject to different diseases. Neuralgia is much commoner on the left side. Meckel has observed that most cases of malformation occur on the left side of the body. Sometimes we see skin eruptions occurring on one side and stopped by the middle line of the body; in other cases the eruptions present a symmetrical pattern on both sides. The effusion of perspiration confined to one side has been occasionally observed.

Cases have been described in which the face or other parts are notably of smaller size on one side. Dr. Henschen* of Upsala, has described a case where there was deficient growth (hemiatrophy) of the limbs and some parts of the trunk. This came on after the patient was fourteen years old: when described he was forty-three. On the right side the man is strong and well nourished; on the left side he is everywhere smaller. When he stands on the right leg his height is 170 centimetres; on the left leg his height is 164 centimetres.

* "Neurologisches Centralblatt," No. 16. 1883.

The left arm and leg are both shorter than the right, and the muscles atrophied, but sensibility is not lessened. There were atrophied spots on some parts of the chest and abdomen where the nutrition was inactive. The man had twice been visited by melancholia, and suffered from spasms.

M. Brown-Séquard, observing that the greater activity of the right hand seems to lead to the special use of the left hemisphere in the articulation of words, and in writing, and thus to the greater cultivation of the left side of the brain, has urged that we ought to exercise both sides of the body equally, so that both sides of the brain should have an equal functional power. He thinks that this would increase the mental balance. If this were the case, we might expect those who were originally left-handed, and who generally retain the use of both hands for a number of offices, thus becoming, to a certain extent, ambidextrous, should have more mental balance than those who give a decided preference to the right hand. This has never been observed to be the case. There is no proof that a man becomes any wiser by being able to use both hands alike; but since custom has clearly so much play in determining what hand shall be used, it is a misfortune when our acquired expertness becomes the exclusive property of one hand. We ought to practise the left hand as well as the right in difficult manœuvres. There is no doubt, for example, that it is of great advantage for a surgeon to be skilful in the use of both hands, and this can only be obtained by practice commenced in early years. At the same time, it seems to me that we might reasonably expect that the specialisation of function of the left brain and the right hand would lead to finer execution where extreme skill is required. Probably it would not be worth the increased time and trouble for a man to try to make the expertness of both hands equal in very delicate operations. The advantage of the division of labour would likely be on the side of the man who concentrated his best efforts on the education of one side. We have here the old question of the relative importance of special and general culture.

It may even be asked, that where left-handedness has shown itself in a decided manner, is it proper that so much trouble

should be taken to make the child break it off. By so doing it is evident that the teacher gives the child a great deal of trouble and perplexity. A left-handed child forced to write with his right hand through fear of punishment, is very much in the same condition as a right-handed one who should be forced to hold his pen in his left. There is no proof that people who remain decidedly left-handed all their lives are less skilful with their hands than others. One of the earliest mentions of left-handedness is in the book of Judges, where it is recorded that amongst the 26,700 fighting men of the tribe of Benjamin, there were seven hundred chosen men left-handed; every one could sling stones at a hair-breadth and not miss.

PAPER XII.

ON MIRROR-WRITING.

BUCHWALD and Erlenmeyer* have directed attention to what they call *spiegelschrift*, or mirror-writing, because, like the impression of a letter taken upon blotting-paper, it can be most easily read by those not used to it in a mirror, where the reflected image takes the appearance of ordinary writing. This inversion of our written characters is sometimes done as a species of puzzle for amusement or curiosity; but I have met with several instances where it was seriously produced, apparently as an imitation of ordinary writing.

E. M. was an imbecile girl, paralysed on the right side from birth or early infancy. She came under my care when seven years of age, and was subject to occasional attacks of epilepsy or epileptic vertigo. She was active in disposition, mirthful, and somewhat mischievous. When she was about eleven years of age, on the governess commencing to teach her to write, which was done by getting her to copy a lithographed line at the top of the page, the girl formed the

* "Die Schrift, Grundzüge ihrer Physiologie und Pathologie," von Dr. Albrecht Erlenmeyer. Stuttgart, 1879.

See also "On Mirror-Writing and its Relation to Left-Handedness and Cerebral Disease," by William W. Ireland. *Brain*, vol. iv., p. 361.

"Peretti ueber Spiegelschrift," *Berliner Klinische Wochenschrift*, 31 Juli, 1882.

"Changes in Handwriting in Relation to Pathology," by A. Bianchi, M.D., translated by Joseph Workman, M.D. — *The Alienist and Neurologist*, October, 1883. Dr. Samuel Wilks seems to be the first living pathologist who refers to Mirror-Writing. See his "Notes on the History of the Physiology of the Nervous System," *Guy's Hospital Reports*, vol. xxiv.

letters with the left hand from right to left in mirror, writing thus—



L. N., aged fourteen, a genetous imbecile girl of considerably greater intelligence than the first case, was left-handed. She began to write in mirror-writing with her left hand, but was interdicted, and in a few months gave it entirely up. She was gradually broken from using the left hand, and could sew pretty fairly with the right. When I asked her to give me a specimen of the mirror-writing, she could only do it with her left hand. Apparently she can write from right to left with about as much ease as from left to right, but cannot now read it so well. Though she speaks freely on simple subjects, she cannot make any explanation as to the directions which she gives to her writing with either hand; but one cannot expect any analysis of a mental process or complex action from an imbecile girl.

There were two idiot boys in the school who formed pot-hooks from right to left, being left-handed, so that in time they would teach themselves mirror-writing. I wrote to several superintendents of Training Schools for Idiots, but none could give me any information on the subject save Mr. Millard, Superintendent of the Eastern Counties Asylum at Colchester, who sent the description of an imbecile boy above twelve who "wrote backwards with his left hand so that it is only legible by turning the paper round or by a mirror." Since my paper in *Brain* appeared, I have found that mirror-writing is not uncommon amongst left-handed children in schools for imbeciles; but that the teachers who were anxious to break the patients from writing with their left hands paid no attention to it, regarding it simply as a bad custom.

A friend of mine who had seen the mirror-writing of the imbecile girl was struck at finding the same inversion in one of his own pupils. He was left-handed, and as teachers think

it their duty to compel left-handed children to use their right, the boy finding this difficult, when the teacher was not looking, secretly wrote with his left hand. The result was a page of mirror-writing, which the boy apparently thought was a copy of the lithograph.

He was a thin and pale boy of thirteen, who, out of school used the left hand. The teacher described him as rather intelligent, and getting on well with his lessons. On being requested to copy a passage out of a book in mirror-writing, he soon returned with it fairly copied. I asked him, "Did you write this with your right or your left hand?" At which he said with some hesitation, that he did it with his right. I told him nobody would be angry with him; when he confessed that he had written it with his left hand, as we had asked him for a specimen of the writing, and he could only do it with the left hand. He could read the mirror-writing fluently. It is perplexing that any one should in copying a line lithographed at the top of the page imagine he was correctly reproducing it when he was writing it in an inverse direction. For example, if any one were told that he must write the word "wonderful" from right to left, he would commence with the l, and trace the letters backwards; while these two pupils not only wrote from right to left, but they inverted the image of the word, so that while the w of the copy was on the left, in their imitation it appeared on the right, as if they had scratched on a pane of glass, and turned it and read it on the opposite side. This, of course, is different from ordinary handwriting from left to right, such as was practised by the Hebrews and Etruscans, and in the modern Arabic letters throughout the Mohammedan world. In their manuscripts or lithographs the lines begin at the free side of the page and run to the left; but then the Arabic letters are naturally adapted to be traced in this way, and indeed it would be difficult to form them in any other. Familiar with this writing by my residence in India, I am of opinion that if it is more difficult to read than the English characters, this is not because it runs from right to left, but owing to the suppression or uncertain quantity of vowels, the writing is so little phonetic that it needs a knowledge of the

language ere one can read a Hindustani or Arabic book. A clerk cannot copy Arabic writing so quickly as English, but this is owing to the nature of the characters, which are more numerous, most of them having an initial, medial, and final form.

I have been told by one who practised mirror-writing for amusement, that it is easier to trace with the left hand; and the following experiment made by my friend the teacher, will show that there is a physiological tendency in left-handed children to fall into mirror-writing. He took a class of sixty boys and girls, and told them all to write their names with their left hands. All copied as well as they could, writing from left to right. Some two girls and three boys wrote in mirror-writing. These were found to be all left-handed, and the only left-handed in the sixty. It did not appear that these children were conscious that they were writing in an inverse direction different from the rest. The left-handed children went to work instantly without any perplexity, and traced their letters better than the other children.

Miss C., the teacher in a public school, took 134 children of the junior division, and, getting the assistance of a colleague, separated them into small divisions, gave them pencil and paper, and told them to write with their left hands, and not to look on one another's papers. Apparently there were six children known to be left-handed, or to have a tendency to use the left hand, and three of them wrote in mirror-writing, and none else.

Dr. Peretti has made similar experiments on a number of school children in Germany. He found that out of 200 pupils, between seven and twelve years of age, 11 wrote both words and cyphers entirely in mirror-writing; besides this, 8 wrote all the cyphers, and 31 some of the cyphers in this form. Thus 50 children (= 25 per cent.) used mirror-writing in whole or in part. He found that of these 200 children, 25 were left-handed; and of the 50 who used mirror-writing, 12 were left-handed (= 24 per cent.); but of those who wrote normally only 8.6 per cent. were left-handed. From Peretti's own experiments, as well as those of Rütke, it seems that cyphers are more frequently traced in mirror-

writing than ordinary text. In the experiments recorded by me all the children who unconsciously used mirror-writing were left-handed. The youngest children in the schools were selected, and their average ages would no doubt be lower than those examined by Dr. Peretti. He correctly remarks that young children and uneducated persons are more apt to fall into mirror-writing.

In one experiment it was found that a man (a Scotchman who had lived in India), who tried to write a few Hindustani words in Arabic characters with his left hand, unconsciously traced the letters from the left in mirror-writing. Peretti tells us that the Japanese whose native characters run from right to left, when asked to write with the left hand do so from left to right.

Dr. Erlenmeyer, in his interesting pamphlet on the physiology and pathology of writing, observes that it seems to be easier to use the arms in a centrifugal direction, the left from the right and the right from the left, the motions not being hindered by the trunk of the body; and that where ease, elegance, and security are needed, the movements of abduction are always performed. He gives turning a handmill, striking a lucifer match, and executing the most brilliant passages on a piano as examples, and assures us that he could easily give more of the kind. In that case his instances do not seem well-chosen. I have been assured that many of the most striking passages on the piano are performed both to and from the centre, and some exercises requiring skilful execution are certainly done in a centripetal manner; using the sling, bowling and batting in cricket are examples; and, in fact, whether in fencing, swimming, sewing, or other actions, movements must be made both from and towards the centre of the body. Nevertheless, taking everything into consideration, it appears true that most actions requiring skill in their performance are done easiest by the arms in a centrifugal direction.

Dr. Wilbur, of Syracuse (N.Y.), has kindly sent me specimens of the performance of a man who could write the same words with both hands at once, the right hand in the usual way, the left in the mirror writing; but as he could

also do the same feat* with both hands moving from left to right in ordinary text, it seems to be more a piece of sleight-of-hand, than any obedience to a physiological tendency. Dr. Wilbur mentions the case of a left-handed child who, when beginning to read, asked his father what "efiw" was. On being told that there was no such word, the child brought his book and pointed out the word "wife." The boy for some time after made similar mistakes. Such inversions not unfrequently occur in teaching imbecile children to read, they will call "no" "on," or "was" "saw." We generally teach them small words before teaching them the letters.

Buchwald, in the Berlin *Klinische Wochenschrift*, gave the case of a man of forty-five, who presented the ordinary symptoms of apoplexy, with paralysis of the right side. After the somnolence, which for some days followed the attack, had disappeared, it was found that he was aphasic, and to enable him to communicate his ideas, he was induced to try writing with the left hand, as he could not do it with the right. He wrote in a very skilful manner his name in mirror-writing from right to left, as well as the numerals from 1 to 10, except the figure 8, which he had forgotten. The inverse direction of his writing was pointed out to him, but he could not be induced to try writing from left to right. His name and some figures being written out and held before him, he copied them awkwardly, but again fell into the mirror-writing. After a time he traced the numbers 1, 2, 4, 6, 8, and 9 correctly, but gave 3, 5, and 7 in mirror-writing. He was asked to multiply a few figures, and the ciphers were correctly put down for him; he wrote the sum from right to left. In this case he must have multiplied the numbers in his mind and then recorded the result in mirror-writing. The patient remained about six months in the hospital at Berlin, during which time, though the power of speaking, writing, and reading returned, the tendency to mirror-writing still persisted. He gave himself great trouble in trying to copy writing from left to right; he said that he could not perform it in this direction with the left hand; when he again had the use of the right hand he would do it correctly. In trying to trace the letters from left to right, he was obliged to

use the half-paralysed right hand to help the left, otherwise the operation miscarried. The 5 was the most difficult to form. Even with the right hand he traced the cipher in mirror-writing, at least, he could not manage the hook of the 5 otherwise.

The best known example of a change from right-handed to left-handed writing, Dr. Erlenmeyer tells us, is that of the MS. of the "Codex Atlanticus" of Leonardo da Vinci, in the Ambrose Library at Milan. It was generally said that in adopting this singular style of writing, Leonardo wished to preserve his work from the eyes of superficial readers; but we can now give another explanation. There is a diary in the National Library at Naples, of the priest, Antoine de Beatis, who, in 1517, travelled in the train of the Cardinal of Arragon, through Germany, the Netherlands, and France. The Cardinal visited Leonardo da Vinci, who passed the last years of his life in the neighbourhood of Amboise, in a villa given to him by Francis I. De Beatis remarks of the famous artist in his journal, "That nothing more of value in painting could be expected of him, as he had paralysis of the right hand." It would appear from this, that Leonardo da Vinci, being unable to use his right hand, wrote with his left, and fell into the practice of writing from right to left, in obedience to a tendency which we have sought to illustrate. A little reflection will enable one to perceive that mirror-writing with the left hand is the exact counterpart of ordinary writing with the right hand. There is the same action from the centre of the body outwards, and the same muscles are used in each limb in the same directions just as in the action of swimming; so we have only to suppose that in mirror-writing with the left hand, the writer obeyed the acquired tendency to a given muscular adjustment. But in some of our instances, children unconsciously produce mirror-writing as a correct copy of ordinary writing, from which it may be concluded that the image in their minds from which they wrote was also inverted.

It may be asked, is the image or impression, or change in the brain-tissue, from which the image is formed in the mind of the mirror-writer, reversed like the negative of a photo-

graph; or if a double image be formed in the visual centre, one in the right hemisphere of the brain and the other in the left, do the images lie to each other in opposite directions—*e.g.*, C on the right side and O on the left side?

Dr. Peretti believes that the tendency to use mirror-writing in hemiplegia of the right side is owing to the mental obtuseness of the patient rendering him liker a young child, or an uneducated person, in whom the mental image of the characters is not so firmly fixed. He quotes the observations of Heidenhain and Grützner, that a woman, hypnotised on the left side of the body—which, it is assumed, implicates the right hemisphere—traced mirror-writing with the right hand as long as she was left alone, but in the usual way when expressly directed to do so. When hypnotised on the right side of the body, she wrote to the right. I cannot account for this on my hypothesis, nor indeed on any other, save by assuming that the woman had heard something about mirror-writing in palsy before she was hypnotised without correctly understanding it. Dr. Elliotson thought he had demonstrated the baseless localisations of phrenology by exciting emotions or actions corresponding to different parts touched upon the head of his mesmerised patient, who must have deceived him some way. In fact, as Dr. Peretti admits, the phenomena in persons hypnotised in one side are somewhat perplexing, since in Heidenhain's and Grützner's experiments as many persons were found to be affected with aphasia through the right side of the brain being acted on as through the left, which is difficult to square with direct pathological observations.

Dr. Bianchi of Naples is more favourable to my hypothesis.

"The child, he observes, attentively fixes the model, in order to impress the image on his brain, and to constrain the muscles of his hand to follow the given direction; sometimes, instead, he does no more than pass with the ink over lines (letters) traced in pale colour on the paper, and thus he obtains that the unconscious impression of the motions executed by the hand is imprinted on the brain along with the image given by the sight; and by many times repeating the same impressions of images and muscular motions associated with the image, it happens at length that they obtain such close association that, in the adult, it is impossible to distinguish the two phases of

the phenomenon. But the same impressions are always produced, and their imprint is preserved in the memory, becoming finally so profound that the practised man succeeds in writing with the eyes shut, as well as with them open, presenting at such times only some disorder in the distribution of the words in the horizontal lines, and the punctuation. Experiment, therefore, tells us that, for the act of writing, we require the impression of the image of the words, and further, the impression of the motions necessary for their formation. This last fact seems to have its seat in the left hemisphere prevalently, but a little in the right also, for it cannot be admitted that the binocular impression transmitted from the eyes, and producing equal images on the hemispheres, calls forth only on the left the muscular contractions necessary for the external impression of the image.

“In a hemiplegia of the right side it will therefore happen that the image, not calling forth, on the left hemisphere, any centrifugal motion of the muscles of the right hand, will oblige the extensor cellular groups in the sound right hemispheres to write from the left, because of the preserved remembrance of the muscular combination associated with the image of the word. Hence there will be an identical centrifugal motion, and the reversed lithographic writing.”

PAPER XIII.

ON THE DUAL FUNCTIONS OF THE DOUBLE BRAIN.

THE interesting question which will be pursued in this essay was first prominently brought forward in this country by Sir Henry Holland,* and was a few years later more fully considered in Dr. Wigan's book, "On the Duality of the Mind,"† a very readable though somewhat desultory work. Some of Dr. Wigan's illustrations and remarks are still of value; but of course the book is now much behind the science of the present day. While searching for what had been written on the subject in the medical literature of Europe, I was directed by a learned friend to two important contributions, an essay on "Le Dualisme Cérébral," by Dr. B. Ball of Paris,‡ and a Treatise of 192 pages octavo on the same subject by Dr. Edgar Bérillon.|| The last work, written by a young physician, destined to become eminent in medicine and psychology, is at once a complete resumé of what has been written by others on the double function of the brain, and a valuable contribution of original observations helping to throw light upon the subject. The number of separate papers from which information of one kind or other has been derived is so considerable, that I must, in advance, ask the forgiveness of the learned writers, if I cannot always mention their names or give references to their articles. The two preceding papers have to

* Medical Notes and Reflections, chap. xii., "On the Brain as a Double Organ," Second edition. London, 1840.

† London, 1844.

‡ "La Morphinomanie, Les Frontières de la Folie, &c." Paris, 1885.

|| "Hypnotisme Expérimental. La Dualité Cérébrale et l'Indépendance Fonctionnelle des deux Hemispheres Cérébraux," par Edgar Bérillon. Paris, 1884.

a certain extent prepared us for the consideration of the question, How far has each side of the brain an independent function?

To the eye man appears to be perfectly symmetrical; seeing one side is as good as seeing the other. This holds true also with the muscles, bones, and joints. All are in duplicate; even those which are united at the middle of the body are made up of two equal halves, one for each side. Such, too, is the structure of the spinal cord, which sends out equal nerves to the muscles of the right and left halves of the body; and as a general rule, so are the veins and arteries which go to the limbs and to the muscles of the trunk. But when the cavities of the body are laid open, a departure from symmetry immediately strikes the eye. The heart is somewhat on the left side, which makes the left lung a little smaller than the right. The great venous trunks are on the right; the bend and course of the great arterial trunk of the aorta are on the left side. The bulk of the liver and most of the pancreas lie on the right side. The spleen is entirely on the left; the kidneys are widely apart and appear of the same size. The intestines cannot from their nature be symmetrically disposed on each side. This want of equilateral distribution leads to a variety in the nutrient vessels, lymphatics, and sympathetic nerves. When we study the development of the body, we find that all these organs were once symmetrical; as the parts become specialised and take on particular functions, they become less and less so. Most animals remain symmetrical on the outside, as such a shape is suitable for locomotion. In some flat fishes, like the flounder and sole, which habitually lie on the sea bottom, what appears the back is really the side; but as there would be no use for an eye on the side next the sand, the two eyes are placed on the other side. This is well seen in the halibut. There are two large eyes, one farther out and farther forward than the other on the same side. Consequently the one optic nerve is considerably longer than the other.

On opening the cavity of the human skull, everything at first appears in symmetrical pairs; the hemispheres, ventricles or cavities, ganglia, veins, and arteries, are all in duplicate.

The weight of each half of the brain is so much alike, that there is still a difference of opinion as to which is the heavier. The divergence in the form of the convolutions is not very apparent. The parts of the brain are not closely connected; the two hemispheres are separated by a deep furrow, and only joined together in a few points by small bands of nerve matter, which are called commissures. The cerebellum is quite a distinct organ from the cerebrum. It is composed of two symmetrical halves, solidly connected at the middle so as to form one organ. This appearance of the brain agreed so little with what men conceived of the unity of the mental operations, that some philosophers refused to place the mind in the hemispheres at all. The mind, being one and indivisible, must have a seat which was single and central; but how could this be in an organism which was visibly double? Hence Descartes placed the soul in the pineal gland, a body about the size of a cherry-stone, situated near the base of the brain. Descartes did not seem to know that this structure also was composed of two exactly symmetrical halves. Soemmering thought the soul resided in the watery fluid of the ventricles. Now-a-days we are too much bound down by observed facts to deny that the two hemispheres have the closest relation to the mental faculties. Nevertheless, the unity of the mind remains as clear as ever. I move my right hand, and then I determine to move my left, and it is done. The left hemisphere has not first to ask the co-operation of the right. I direct the will through both. We are told that thought and feeling are owing to disintegration or integration of nerve tissue, to molecular changes, to vibrations in the nerve cells or fibres, various terms for motions of particles of matter. Atoms come nearer to one another and then recede, join or disjoin, quaver up and down and then cease to quaver, and this explains why I feel pain, or believe 4 times 6 to be 24, or like to read Shakspere, or remember that I was at the Siege of Delhi, or can find or infer what took place before I had any brain at all, or anticipate what will be long after the atoms that compose my brain have ceased to clash to and fro within its bony case.

It is true the mind at once rises into incredulity when told

that the motions of atoms in space are the cause of thought. It is said that the incongruity is only apparent, that it is simply owing to the different ways the two events, which are really identical, come into the mind, one series through the avenues of the senses, another revealed by direct consciousness. Our minds may be constituted so that we cannot recognise what is really a single series of events as otherwise than as different, incompatible, and incongruous. If the mind be of this delusive nature, it is no instrument to use for inquiry, and search for the truth seems hopeless.

The efforts of those who view the mind introspectively in its wonderful powers, and those who examine the brain with balance, scalpel, microscope, and chemical reagents, have not brought forth congruous results. They are like workmen tunnelling a mountain from opposite sides. Until they have met in the middle the tunnel is useless, and to communicate with one another they must climb over or round the mountain amongst all its dark forests, its giddy precipices, and slippery glaciers.

The human body is a machine exquisitely adapted on its surface to be acted on by some of the forces of the material world. The variations in these forces produce organic changes in the nervous system and brain, which are read off and reacted on by the mind. There are many secrets in our organism which we cannot yet guess, but whose solution we seek through an irresistible fascination. It seems as if the regulating force in the universe were akin to the regulating mind in our own bodies. We catch glimpses of the plan of Nature as a child may catch glimpses of the design of some complex machinery devised by some great engineer.

One has no difficulty in believing that changes take place in the tissue of the brain, and that the mind perceives these changes, and infers from them other changes beyond the circuit of the organism which it uses. Without such an organism, apparently it would not be able to recognise the changes in the material world, as we would not know the variations in the weight of the atmosphere without a barometer. Perhaps some other device would answer, or perhaps our being, our life, so far as it is based on the perception and fruition of the material world, could not be without an organised frame

of some kind or other, or at any rate, if destitute of such an apparatus, would need to exert its potentialities after a fashion different from what we know of. To me the brain seems not to make up our whole being. The active intellect may survive, connecting itself, perhaps, with a new organism to enable it to discern the changes in the material world. This is taught by all the great religions alike, Christianity, Islam, Buddhism, Brahminism. Theologians distinguish between the resurrection of the body and the resurrection of the same body.

It seems to me that the percipient must be different from the thing perceived; the thing that wills different from the motions it sets agoing. If memory have its signs imprinted in the brain, like letters on a scroll, does the scroll read itself and at once send and record its answer? A physiologist made a calculation that there were so many thousand cells to the square inch. He found that there was room in the brain for all our words and all our thoughts, one to each cell. This is a familiar quotation in works of the materialistic school. Could shallowness be shallower? as Spinoza says, Can we conceive of a space bounding an idea or an idea bounding a space? The truth is, all about cells generating or holding ideas, and fibres and cell processes conducting them, are sheer assumptions as idle and unproved as the dreams of the schoolmen. We cannot differentiate the function of the nerve cell from that of the granule or even of the fibres which radiate and lie all around. In reality we do not know how much the grey matter, and how much the white matter, has to do in the initiation of motor impulses, in the conduction of sensation, or the realisation of mental images.

One anxious inquiry is, If the soul separates from the dead brain, what faculties or powers will it take with it? Were we able to give any answer to such a question, it would be useful in this present inquiry. If the brain be functionally double, are the mental operations also double? or are they ruled into unity by an immaterial mind acting through both hemispheres?

Of all the mental faculties, memory seems the most dependent upon material organisation. It has been supposed that its signs or symbols may be changes in the nervous

system, recognised by the mind as having a certain association and significance. We have already noted its close relation with language whose counterpart is the repetition of heard sounds, and the motor initiation of words. Most, if not all, conscious operations of the mind are followed by a remembrance in many cases extremely transient and fleeting. Mr. Joseph Bell* has called attention to a condition which can best be described in his own words: "In a certain number of head injuries, in addition to and after recovery from the early symptoms, which I have classed under the first or primary phenomena, it is found that the victim has, much to his own surprise, *forgotten entirely*, not the accident itself and the succeeding circumstances only, *but a certain length of time, varying in different cases from minutes up to hours, and even days, with all its actions, pains, and pleasures, before the accident happened.* Were it needed, cases of this kind could be supplied from my own experience." Mr. Bell compares this obliteration of memory through a violent shock with the wiping out of a written page ere the ink was dry, or the disturbance of a photograph before due time was allowed for exposure.

In the discussion which followed the reading of this paper, Professor Calderwood told of a medical man who met with a railway accident: "None were rendered unconscious by it, but when they got out of the train, the doctor had forgotten entirely where he was going, and it was only on being reminded that it was to High Blantyre, and on looking at the label on some medicine he had in his pocket, that he remembered his patient's house and his destination. In this instance the loss of memory seemed to occur without the loss of consciousness."

This separation, more or less, of memory from consciousness is an event we have already had to consider. It seems to me difficult to see how the active intellect separated from an organised frame could take with it all its remembrances, many of which would likely be useless in a new state. How much it might lose, or retain, is a speculation which cannot here be entered on.

* "On a Form of Loss of Memory occasionally following Cranial Injuries," by Joseph Bell, surgeon to the Royal Infirmary (read before the Medico-Chirurgical Society of Edinburgh, 16th January, 1883).—*Edinburgh Medical Journal*, February, 1883.

To return to the question more directly before us, it will not be disputed that the two hemispheres, and especially the cortex or outer layer of grey matter, are the organs which are most intimately connected with the use of the mental faculties.

Let us consider how far their structure warrants us calling them one conjoined, or two separate organs.

After removing the enveloping membranes and the falx which hangs like a curtain between the two hemispheres, and looking down the wide furrow of separation for about two inches, one sees that they are held together by a band of white nerve matter, which crosses them from the substance of the one hemisphere to that of the other, uniting the two for about one-half their length. This structure, called the corpus callosum, is composed of nerve fibres, and a few cells and nuclei. It is about an inch in width behind, and half-an-inch thick. In front it is narrower and thinner. The phrenologist and physiologist of the earlier period of the century assigned to this band the function of keeping in co-operation the two hemispheres of the brain. Thoughts or impressions generated in the nerve cells of the grey matter, were conducted by the fibres of the white central matter of the brain to the corpus callosum, so that the one side of the brain knew what the other was doing.

This was certainly a somewhat devious route, rather a clumsy device of nature, to be found in so wonderful a piece of mechanism as the brain. At any rate, it was the highest point at which the hemispheres were bound or joined together. The fibres of the corpus callosum were often described as radiating through the white matter, and were assumed to go in all directions. Foville and Gratiolet, who carefully examined the corpus callosum, thought that it was only in part a commissure. A later observer* came to the conclusion that the corpus callosum is not a commissure at all, and that

* *British Medical Journal*, 24th May, 1884. In objecting to Professor Hamilton's theory of the psychical functions of the corpus callosum in the same Journal (28th June), I did in no way cast doubts upon his trustworthiness as an observer in histology. As in the republication of his researches on the corpus callosum in the *Journal of Anatomy and Physiology*, the learned professor has neither defended nor repeated the theory called in question, it is to be hoped that he has finally dropped it.

very few fibres pass over to the grey matter of the opposite hemisphere. The fibres can be clearly discerned to arch outwards, and then downwards, and slightly inwards. They cross and interlace one another and go to the optic thalami and corpora striata of the opposite side. Some fibres also pass to the olfactory lobe and optic tract.

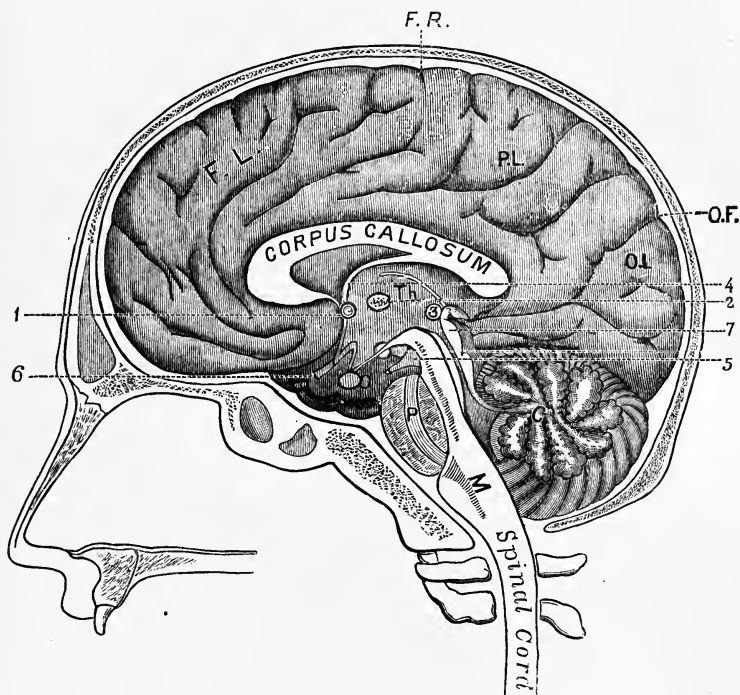


FIG. 1

Represents a section down the Middle Line of the Skull and Brain. The divided surfaces are:—The Corpus Callosum: 1. The Anterior Commissure. 2. The Middle or Grey Commissure. 3. The Posterior Commissure. C. The Cerebellum. P. The Pons Varolii. M. The Medulla Oblongata; The Spinal Cord. 4. Indicates the Fornix. 5. The Third Nerve, Motor of the Eye. 6. The Optic Nerve. Th. The Optic Thalamus. 7. The Tubercula Quadrigemina. On the Middle Aspect of the Brain are displayed—F. L. The Frontal Lobe, bounded by F. R. The Fissure of Rolando; P. L. The Parietal Lobe, bounded by O. F. The Occipital Fissure, and O. L. The Occipital Lobe. The bones of the vault and base of the skull are sawn through.

The connections of the corpus callosum are thus mainly with the base of the brain and the ganglia of smell and sight. A few of its fibres run into the anterior commissure. This is a minute band of nerve fibres which connects the two corpora

striata together, and passing through their substance, radiates to the temporo-sphenoidal convolutions of the brain. These, as we have seen, have something to do with the passing of heard words into mental images. The soft or middle commissure, principally of grey matter, connects the two optic thalami. It is frequently wanting. The posterior commissure also runs between the two thalami, and its fibres pass to the corpora quadrigemina, ganglia intimately related to the function of sight. The fibres also connect the deep origins of the nerves which supply the motor muscles of the eyes.* These commissures are so many small bridging structures connecting the right and left ganglia of the base of the brain across the middle.

From this rapid survey, it will be seen that the hemispheres, though connected below and sending down fibres to the pons to meet in the spinal cord, are, as they lie under the upper vault of the skull, organs very partially connected to one another.

The study of disease of the corpus callosum confirms this view. Its fibres do not seem to become degenerated through disease. When a portion of the neighbouring white matter of the centre of the brain loses its function through disease, the degeneration follows another path to the spinal cord. Assuming its function to be to keep up communications between the two hemispheres, we might ask why does it not degenerate like any other inert organ when one hemisphere is destroyed or disorganised? The corpus callosum is a very healthy organ, and is most rarely attacked by acute disease. Reinhard† has published a case where its tissue was destroyed by red softening in three-fourths of its extent. In this patient the equilibrium of the body was much affected, and the mind weakened. One might have expected, on theoretical grounds, that injury of the corpus callosum should lead to a loss of coaptation of both sides of the body, and a want of congruity both in time and place; but it was by no means certain that these incapacities were due to the lesion of the corpus callo-

* *Neurologisches Centralblatt*, 1 März, 1885.

† See the *Centralblatt für Nervenheilkunde*, 1 und 15 Februar, 1885.

sum. The symptoms resembled those of senile dementia. The man was old, and there were traces of atrophy in the brain as well as destruction of the corpus callosum.

Erb has described another case where the anterior three-fourths of the corpus callosum were destroyed by hemorrhage without any disturbance of motility, or co-ordination, loss of speech, or injury to the intellect beyond drowsiness.*

Dr. Bristowe† has described four cases of tumour implicating the corpus callosum, but he himself attributes the symptoms to the new growth, from its position in the centre of the brain, destroying or compressing surrounding parts. If the tumour grew towards the upper part of the hemispheres, there was loss of memory and intelligence, if downwards, on the optic tract, the patient remained sensible, but sight was affected. If it spread to the left side, there was right-sided paralysis, and aphasia; if the tumour grew to the right side of the brain, there was left-sided paralysis of the body.

Hitzig, who has studied the question carefully, observes that no well-marked disorder of motion or sensation follows atrophy of the corpus callosum, nor is there any characteristic mental defect attendant upon this lesion.

Those who hold that epileptic fits have their points of departure from irritation of the grey matter of the brain, have a difficulty in showing how the excitement arising from any injury to one hemisphere is propagated to the other hemisphere, so that the spasms in regular order affect one side of the body after the other, and the disturbance passes to the uninjured hemisphere, involving total unconsciousness. It has been found that complete section of the corpus callosum in animals does not prevent convulsions, excited by injury or irritation applied to one hemisphere, from becoming general. This would imply that the excitement had spread to the opposite hemisphere, which then set in tumultuous motion the muscles of the side of the body which it represented.‡ Fail-

* *Journal of Nervous and Mental Disease*, January, 1885, p. 121.

† *In Brain*, October, 1884.

‡ I may be here accused of passing over in silence the explanation of Dr. Hughlings Jackson. In his Croonian Lectures (*British Medical Journal*, 29th March, 1884), he held that this extension of the epileptiform

ing the corpus callosum*, the irritation must be transmitted by a commissure or connecting structure below it.

More decisive proof has been gathered from the consideration of congenital deficiency of the corpus callosum. Perhaps thirty cases have been published, one of which I happen to have seen in a deaf woman who died in a lunatic asylum. The entire absence of the corpus callosum was complicated with other deficiencies in the brain. This is so generally the case, that much caution needs to be taken in drawing inferences from the want of the corpus callosum; since, of course, the incapacities observed during life may be owing to abnormal structure actually observed in other parts of the brain. But there are, at least, three* instances where the corpus callosum was found to be entirely wanting, without any mental derangement or deficiency of intellect being observed during life, and without any manifestation of a double personality. It seems, therefore, impossible to avoid the conclusion that the two hemispheres of the brain can perform their usual functions without this structure, which serves to bind them together, but whose other functions are unknown.

In this essay one must assume that the reader possesses as much knowledge of the structure of the brain and cord as can be gained from a manual of popular physiology. The reader need therefore scarcely be reminded that the pons Varolii lying on the floor of the skull, is the place of union of all parts of the brain. Here the bundles of nerve fibres descending from the hemispheres unite with those of the cerebellum to descend

fits to the other side of the body was owing to each half of the brain representing in part, though in unequal proportions, both sides of the body. I am inclined to favour the view of Franck and Pitres, which he quotes, that the brain commences the convulsive attack, and the pons, bulb, and spinal cord, generalise it. I cannot discuss the question here; but it is likely that the later experiments of Unverricht (*Archiv für Psychiatrie*, xiv. Band, 2 Heft) have induced so candid and thoughtful a physician as Dr. Jackson to modify his view on this point.

* There is a report of two of these cases in my Book on "Idiocy and Imbecility," p. 67. The third is described by Dr. Eichler, in the *Archiv für Psychiatrie*, viii. Band, 2 Heft, and reported by me in the *Journal of Mental Science*, January, 1879, p. 678; and in *Brain*, vol. 1, p. 419. Other cases are cited by Dr. Bérillon, *op. cit.* pp. 21, 22.

into the upper part of the spinal cord, which is called the bulb, or medulla oblongata. In this upper part of the cord, most of the fibres which transmit motor impulses from each hemisphere cross over to the opposite side. This explains why a motor impulse coming from the left hemisphere moves the right side of the body, and one from the right hemisphere moves the left side. This was proved experimentally by Dr. Bartholow of Cincinnati, who had the boldness to insert into the brain of a patient exposed by disease a needle, in communication with a galvanic pile. By this means, without arousing any sensation, he was able to cause convulsive movements on the side of the body opposite to the irritated hemisphere.

The sensory nerve fibres, which, coming from the surface and deeper parts of the body, and gathering into nerve trunks pass to the spinal cord, cross at once to the opposite side. As long as their connection with the brain is maintained intact, sensations of touch, pain and heat, are realised through the opposite hemisphere of the brain. The fibres which are believed to transmit the impressions from which are aroused the sensations of motions and position of the limbs cross higher up at the medulla. Thus all cross more or less completely. Each hemisphere has therefore to do with the sensations and motor impulses of the opposite side of the body. It is generally held that there are some fibres, both motor and sensory, which do not cross, going to the hemisphere of the same side.

Pitres and Franck* found that by using a weak Faradic current applied to the motor zone of one hemisphere in the dog, they were able sometimes to excite, instead of movements on the opposite side of the body, associated movements of both sides.

Paralysis of one side of the body has been found to exert a weakening influence on the muscles of the non-paralysed side quite independent of the depressing effect of the shock to the general health of the patient. The sensibility of one side of the body has been preserved even after great destruction of the sensory portion of the corresponding hemisphere. Each

* *Progrès Médical*, No. 1, 1878.

half of the brain may be held to have presiding functions over both sides of the body, but in unequal proportions ; as Hughlings Jackson puts it, "all parts of both sides of the body are represented in each half of the brain." He holds with Broadbent that the more voluntary muscles are unequally represented in each half of the brain, whilst the bilaterally-acting muscles are very nearly equally represented in each half.* The muscles under the especial command of the will, such as those of the arm, are almost entirely regulated from the opposite side of the brain, and are, therefore, paralysed by a lesion of that side. On the other hand, those muscles on both sides of the body which generally act together at once like those of the jaw, throat, and diaphragm, derive their nervous impulses almost equally from both sides of the brain, and can, therefore, only be stopped in their action by injury or disease acting on both sides of the brain. Thus, the influence of the right brain over the voluntary muscles of the left arm may be put down as 48 per cent. ; over the right arm 2 per cent. That of the left brain *vice versa*. Over the bilateral muscles, say of the throat and tongue in mastication and swallowing, the representation of the right brain is 25 per cent. on the muscles of the left side, and 25 per cent. on the right ; but in representing the movements used in speaking, its influence is but 5 per cent., or less or more, but never so much as that of the left brain, which would be for the movements of swallowing 25 per cent. for each side, but for speech 95 per cent., or more or less thereabouts.

The muscles of the neck and trunk seem to get their principal nervous supply from the hemispheres of the *same* side (Unverricht). In paralysis of one side following a brain lesion the orbicularis muscle, which closes the eyelids, is only so far affected that the patient cannot shut the eye alone, but he can shut it along with the other eye. That is, the motor

* "Evidence that at least some parts of both sides of the body are represented in each half of the brain is that, consecutive to a negative lesion of one internal capsule, there is wasting of nerve-fibres 'descending' into both sides of the spinal cord."

impulse from the uninjured hemisphere acts at once upon the muscles of both sides.

In some rare cases an injury to one side of the brain is followed by paralysis of the limbs of the same side.* It is believed that in the individuals so affected the motor fibres do not cross in the cord. This explanation is rejected by Brown-Sequard.

Unless arterial blood circulate in the brain, mental activity ceases. Not only is the blood needful for repairing the waste of tissue which follows cerebral activity, but arterial blood seems to be a necessary factor along with the nervous tissue in all manifestations of cerebral activity. The blood stands to the brain action as the acid does to the zinc and copper plates in a galvanic pile. Each larger artery has a region of the brain mainly dependent upon it. If it be blocked, the function of the part ceases till the collateral circulation from the connecting network restores it, or perhaps the part softens and becomes quite disorganised. The brain arteries of one side, in their terminal branches, join with those of the same side. It has been found that injections can scarcely be made to pass from the vessels of one hemisphere to those of the opposite hemisphere unless through the anterior communicating artery at the base of the brain. In short, the independence of the blood circulation of the two hemispheres is almost complete. The vessels are the same on either side, though on the left they are slightly larger, betokening a greater functional activity. But the blood which enters either side of the brain is, of course, the same in kind and quality. The brain tissues are the same, and with the connecting commissures and the common relations to the spinal cord, it will hardly do to talk of the double brain as two brains or two minds, as Wigan would have it. Two brains would denote two persons.

George Buchanan, in his "History of Scotland,"† mentions a strange kind of monster born in the reign of James IV.:—"In the lower part of the body it resembled a male child, differing

* Exner, "Untersuchungen über die Localisation der Functionen in der Grosshirnrinde des Menschen," Vienna, 1881, p. 83.

† See Aikman's "Translation," Edinburgh, 1832, vol. ii. p. 166.

in nothing from the ordinary shape of the human body, but above the navel the trunk and all the other members became double, and were distinct, both in their use and appearance. The king caused it to be carefully brought up and educated, particularly in music, in which it wonderfully excelled. It also learned different languages; and in their various inclinations the two bodies appeared to disagree between themselves, sometimes disputing, each preferring different objects, and sometimes consulting as if for the common pleasure of both; and what was remarkable, when the lower limbs or loins were struck, both felt the blow in common; but when pricked, or otherwise hurt above, only one of the bodies was sensible of pain."

All who have seen the two negro girls, Milly-Christina, exhibited in Europe about six years ago, will note their resemblance to the abnormal creatures described by Buchanan. One of these girls was somewhat bigger and better formed than the other. They were united behind at the loins; above this they were separate. The lower portion of each spinal cord appeared to be interlaced so that nervous communications from all the lower limbs reached both brains at once. Thus, the contact of each of the four feet on the ground was felt at once by them both, which accounted for the striking symmetry of their motions as they walked along conversing with one another. Of these girls, Serjeant Cox writes, that either could "move and direct those parts in which there was a common feeling without the consent of the other partner, although not *against her will*. If one desired to move the muscles in one direction, and the other in another direction, the result was that no movement ensued."*

Twins named Helen and Judith, joined together in a similar manner, were born in Hungary in 1701, and died at the age of twenty-two years. They have been carefully described by Geoffroy Saint Hilaire, along with another couple named Rita-Christina, who only lived eight months and a half. These creatures were united about the waist. Below this, the

* "Heredity and Hybridism," by Edward W. Cox, S.L. London, 1875, p. 38.

parts were fused so that sensations in the lower region of the body were common to both. They had but two legs. If one aroused feeling in the right leg, Rita alone felt it; if one did so to the left leg, Christina felt it, and not Rita.

In all these cases the personality was quite distinct. Helen and Judith, when children, sometimes quarrelled with one another, and even exchanged blows. Sometimes the stronger or the angrier raised the other on her shoulders and bore her away. Sensations from certain parts below the spot of conjunction were common to both. The circulation was connected by the union of large bloodvessels. With Rita-Christina, the beatings of the two hearts were synchronous, so that some physicians thought that they had only one heart; but when Rita took a fever, the heart pulsations rose to twenty beats in the minute more than her sister.

In the arrangement of what is called the optic tract we catch a glimpse of the plan by which nature secures unity of vision. Gathering up in the layer which is called the retina the various nervous tissues spread out to the light in the inner chamber of the eyes, the optic nerves pass backwards to the base of the brain, where they unite and then separate, much after the fashion of an opened pair of scissors. The eyes may be compared to the round handles; the meeting point, where the nail goes, to the commissure or chiasma; the cutting blades to the extensions of the optic tract, which pass backward, connecting themselves with a series of ganglia (the quadrigeminate and geniculate) until they finally radiate in the hemispheres; being, it is believed, mainly distributed to the occipital lobes at the back of the head. Some of the fibres which compose the optic nerves run in front of the commissure, from one nerve to the other, thus connecting the two retinae; others behind, run from one limb of the optic tract to the opposite one. Then again, the largest bundle of nerve fibres crosses over to the opposite side of the brain; but a smaller bundle goes on without crossing to the brain of the same side.

Munk and his followers hold that the occipital lobes of the brain are necessary for the perception of objects of sight, and that the destruction of both these lobes causes blindness.

Destruction of one lobe is not followed by blindness in one eye; it is followed by what is called hemiopia, or hemianopsia, blindness of half the visual area of the retina on the same side

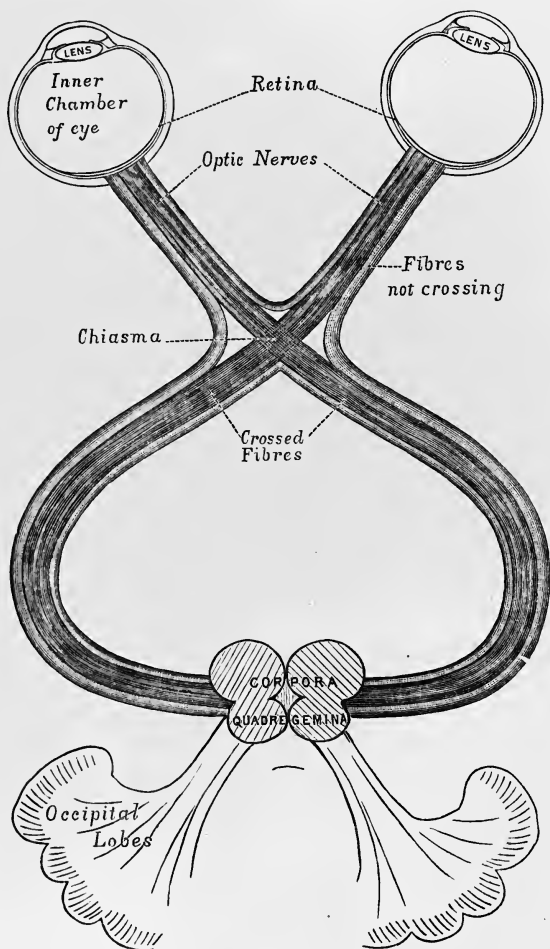


FIG. 2.

in both eyes. Destruction of the left occipital lobe, for example, is followed by blindness on the side next the temple on the left eye, and next the nose on the right eye. But the area of blindness is greatest on the right side, owing to the larger size

of the nervous bundle which has crossed, standing to the uncrossed bundle as two thirds to one third. The arrangement is, of course, *vice versa* on the right side. Thus each eye sends fibres to both sides of the brain; and both sides of the brain receive fibres from each eye. From this it will be easily inferred that hemiopia generally affects both eyes at once. Hemiopia affecting one eye is produced by an injury to one optic nerve *before* the commissure; behind this junction a lesion of the optic tract or ganglia on its course, or of the occipital lobe, causes hemiopia in both eyes.

Munk's assertion, that removal of the occipital lobes causes total blindness, has been denied by some able experimenters. Goltz, in his numerous vivisections on dogs, found that removal of any part of the hemispheres caused diminution of vision. He admitted that the injury to sight was greater when the occipital lobes were removed, than when the frontal lobes were removed, but stated that this blindness soon passed away. The animal still avoided obstacles; although he retained his sight, he could not interpret correctly the sensations of vision. He could not distinguish, for example, a bit of meat from a stone by sight alone. This has been called *Seelenblindheit*, mental or psychic blindness. "The visual perceptions remain intact, the animal sees everything; but the visual conceptions (*Vorstellungen*), and the associations (*Erinnerungsbilder*) of former visual conceptions are completely gone; the animal knows or recognises nothing that he sees. Luciani, in his experiments on animals, found that the blindness in both eyes following removal of the occipito-temporal area on both sides, which is far more extensive than the visual sphere of Munk, soon disappears and is succeeded by mental blindness. "What they want," he says,* "is the discernment of things, and a right judgment concerning their properties and their nature."

We thus see by what complicated arrangements the two optic nerves are, as it were, welded into one another; nor need we be surprised to find that a strong colour exposed only to one eye, is made sensible to both. This has been proved by experi-

* *Brain*, vol. vi. p. 153.

ment by Mr. Graham.* To use his own words; "When one retina is fully impressed with the sensation of a given colour, and the other retina feebly illuminated with white light, a current of colour is set up between the two eyes, and this current is propagated from that eye which receives the most light towards that which receives the least. And, moreover, that which is transmitted to the left eye, is first the complementary, and then the colour itself, of that which impinges on the right retina."

Foster tells us in his Physiology, that if two surfaces of different colours are presented at once, one to each eye, "The result is, in most cases, not a mixture of the two colours, but a struggle between the two colours; now one, and now the other becoming prominent, intermediate tints, however, being passed through." This may arise from the difficulty of accommodating at the same time for the two different colours; if two eyes, one of which is looking at red, and the other at blue, be both accommodated for red rays, the red sensation will overpower the blue, and *vice versa*. It may be, however, that the tendency to rhythmic action, so manifest in other simpler manifestations of protoplasmic activity, makes its appearance also, in the higher cerebral labours of binocular vision.

Every one who has two eyes, receives two sets of visual sensations; but as long as the images of an object fall upon parts of the retina accustomed to act in concert, we see the object as single. If one eye be put into a different position from the other, as in squinting, so that the images fall upon different points of the retina, a single object is seen as double. The corresponding points in each eye are so arranged, that the same part of an image falls upon the temporal side of the left eye, and the nasal side of the right eye, and *vice versa*. It is by an effort of the muscles which roll each eye, acting at once, that both eyes converge to a given point, the object at which our attention is directed. Behind and in front of this point we really see double images, as may be proved by a simple experiment; but the mind, having its attention fixed

* "On the Blending of Colours by the Sole Agency of the Sensorium," by John Graham, M.R.C.S., *Brain*, vol. iv., p. 367.

upon a clear and distinct image, does not notice the vague images of objects at a different focus. Then again, the image of a projected solid body which falls upon the left eye, cannot be exactly like that which falls on the same spot in the right eye, but so far from this hindering us from recognising the two images as one object, it can be proved that our idea of a solid body is really derived from the two varying aspects being fused by the mind into one image, which is not exactly like either, but a compound of both. This is well illustrated by Wheatstone's stereoscope and other experiments devised by him, in which the idea of solidity or projection is made to rise in the mind from the fusing together of two pictures of dissimilar aspects formed upon the two retinæ.

The arrangements by which sounds from either ear reach the brain, seem to be on a similar plan. Luciani finds that each ear has connections, through the auditory nerve, with both auditory areas in the brain, but chiefly with that of the opposite side. This distinguished physiologist finds that extirpation of the temporal lobe on one side causes dulness of hearing which gradually fades away. If the auditory area be extirpated on both sides of the brain, the animal seems, for a time, almost totally deaf. This slowly passes away, being replaced by mental deafness, in which the animal seems "not to appreciate the meaning of sounds, noises, or calls, though it appears to hear them."

In some cases of hyperæsthesia of hearing—*i.e.*, great irritability of the auditory nerve, the use of electricity leads to sounds which are heard, not on the side on which the galvanic current was applied, but in the opposite ear. This has been called paradoxal reaction.

Such terms as "visual centres," "auditory centres," "motor centres," though now much used, and convenient from their brevity, are very liable to be misleading. While it may be admitted that some vaguely-defined parts of the grey matter of the brain have more to do with certain sensations and certain motions than other parts of the brain, it has not yet been proved that such is their exclusive function. When these parts are removed, the lost or injured function generally reappears after a time, either in whole or in part, by what has

been called the vicarious action of the other parts of the brain. The animal, for a time blind or deaf, or paralysed, by degrees again becomes able to see, hear, and walk.

The difficulty of assigning circumscribed areas of the surface of the brain to certain separate functions is well displayed in the diagrams for Luciani's paper, "Sensorial Localisations in the Cortex cerebri." The visual sphere, which in every new article or monograph gets bigger and bigger, now occupies three-fourths of the cerebrum, overlapping all the other spheres. The auditory sphere, having its headquarters in the temporal lobes, covers, in addition, portions of the olfactory, visual, and tactile spheres. The tactile sphere completely covers the motor sphere, and so on. Not content with the lots of brain area knocked down to them by physiologists, these unconformable "spheres" claim a joint share in large surrounding areas. Let us hear Hughlings Jackson on this vexed question.

"It may be said," he writes, "that one convolution will represent only the movements of the arm, another only those of speech, another only those of the leg, and so on. The facts above stated show that this is not the plan of structure of the nervous system. Thus, to take an illustration, the external parts x , y , and z , are each represented by units of the corpus striatum. But the plan of representation is not that some units contain x largely only, as x_3 , others y largely only, as y_3 , but that each unit contains x , y , and z —some, let us say, as x_3 , y_2 , z ; others as x_2 , y_3 , z , &c. When we come to the still higher evolution of the cerebrum, we can easily understand that, if the same plan be carried out, a square inch of convolution may be wanting, without palsy of the face, arm, and leg, as x , y , and z , are represented in other convolutions."

Bearing these qualifications in mind, one arrives at a notion of an area where the impressions of sight and the memory of visual images have their main site at the back of the head in the occipital lobes, and the bordering region; in front of this are the temporal or temporo-sphenoidal convolutions, where heard words are localised, especially on the left side.

In the middle brain, in the anterior or posterior median convolutions, and for some little space around, is the area for motor impulses and tactile sensations. Ferrier places the sensation of touch from all the surfaces of the body in the

hippocampal region. This psychomotor region includes the lower part of the ascending or third frontal convolution.

Common assent, rather than scientific proof, has assigned the higher mental operations to the frontal regions. The intelligence itself, the *φρῆν*, is in all parts of the cerebrum, interpreting the sensations and directing the motions of the body.

Such definitions include some general truths; but the

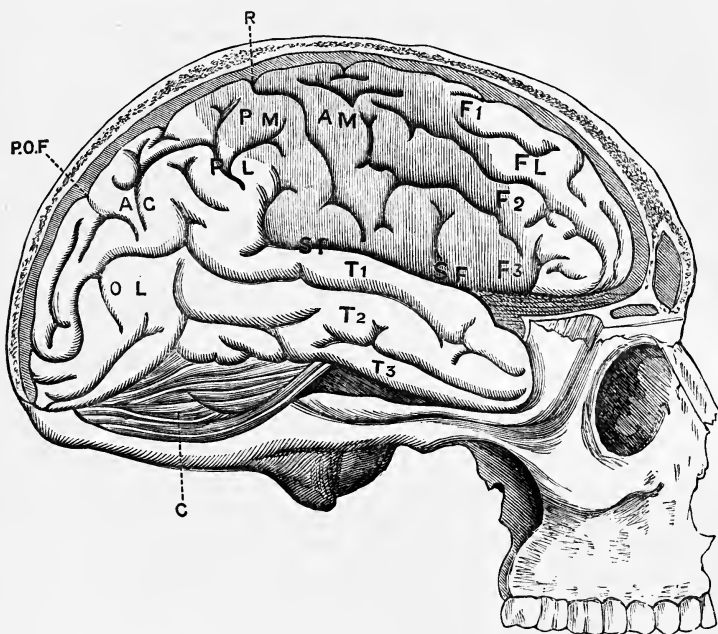


FIG. 3.

Represents the Right Hemisphere of the Brain exposed in the Skull. Commencing behind, you have O. L., the Occipital Lobe lying on C., the Cerebellum. Above it is bounded by P. O. F., the Parieto-Occipital Fissure, which separates it from P. L., the Parietal Lobe. This contains A. G., the Angular Gyrus, believed to be a part of the visual area, and P. M., the Posterior Median Convolution, which is part of the motor area. The whole motor area is shaded. R., the Fissure of Rolando, separates the Parietal Lobe, P. L.; from the Frontal Lobe, F. L., both being bounded below by S. F., the great Sylvian Fissure. The Frontal Lobe contains F¹., the Superior Frontal, F²., the Middle Frontal, and F³., the Inferior Frontal Convolution. In the lower third of the Inferior Frontal, especially on the left hemisphere, is the centre for the articulation of words:

The Temporal Lobe, T. L., contains T¹., the Superior Temporo-Sphenoidal Convolution, believed to constitute part or whole of the auditory centre; T²., the Middle; and T³., the Inferior Temporo-Sphenoidal Convolution.

structure and functions of the brain are too complicated and too subtle to be stated in brief and simple terms, and explained

by easy diagrams. Indeed, they are too subtle for our language. The worn-out terms of the formal metaphysics deceive us between their old meanings and their new, as much as the imposing clatter of materialistic formulæ. We ought to have new words with no distracting associations for the new psychology, the phreno-pathology which is forming around our study of the development and of the diseases of the nervous system.

It has been suggested that when the injuries to the brain have been only on one side, the restoration of impaired or destroyed functions may be owing to the corresponding portions of the opposite hemisphere acting for both sides of the body. This holds good for animals lower in the scale of life. In the pigeon, for example, one hemisphere may be entirely removed, and in a few days, the slight crossed paralysis will have disappeared, and the bird will be able to fly and hop about, as if it had experienced no real loss.

Here we cannot do better than translate the thoughtful words of a French naturalist.*

"If the division of work between the two sides of the brain were complete, one could not conceive how the destruction of the right hemisphere could gain for the left hemisphere physiological properties of which the last organ was destitute before the removal of its fellow, and *vice versa*. But the difficulty disappears when one considers the gradual manner in which the localisations of the special functions appear in the ascending scale of the animal kingdom. We see an organ, which in the lower ranks of animated beings is charged with two functions, becoming more and more fitted to fulfil one of them only; whilst the other faculty enfeebled in this organ, becomes predominant in a neighbouring one.

"Let us suppose that the division of labour between the two hemispheres is not complete; but that the influence exercised by each hemisphere, A and B, embraces the two halves of the muscular system, *a* and *b*, but so unequally, that hemisphere A exercises on *a* an action only equal to 1, while it exercises on *b* an action equal to 999,—the sum of the exciting influences exercised upon each of the halves of the muscular system by the whole brain will be 1000; but after the destruction of hemisphere A, the amount of the excitomotor

* Professor Milne-Edwards, quoted by Bérillon, p. 49.

force acting upon the muscles *b*, will only be 1, while the amount of the same force acting on the muscles of the side A will be but 1 less than $1000 = 999$. On this side, then, the loss will be insignificant, whilst on the opposite side, the loss will be so great that the effects of the remaining factor may be quite overlooked."

Milne-Edwards thinks that by continual exercise the power of A over *a* may so increase, that the will may recover to a limited extent its command over the muscles of the paralysed limb. With animals, the reparative power, the capacity for recovery from the weakness or paralysis of limbs after loss of portions of the brain, seems to diminish as they rise in the scale of organisation. It is less in the dog than in the pigeon, and less in the ape than in the dog.

The paralysis following the removal of the motor zone in the brain of the dog has been found to disappear if the animal be kept alive for a few weeks. Bianchi found that this even held good with the monkey. It has been supposed that this renewal of power in the limbs of the animal was owing to the uninjured side of the brain taking up the function of its fellow. According to Goltz, this explanation will not cover all the facts observed by him. There is no doubt, he remarks, that each hemisphere stands in connection with all the muscles and sensory apparatus of the body. He has thus nothing to say against the view, that after injury to one side of the brain, the other side takes up more vigorously its hitherto neglected parts; but the idea that the so-called symmetrical centres are needed for the renewal of the function of the injured parts of the opposite hemisphere is contradicted by facts. Removal of a portion of the brain always causes injury to the opposite side. In two experiments he found, after a lesion to the left hemisphere, the usual symptoms on the opposite side of the body, paralysis and loss of sensation, from which the animal slowly recovered. After this recovery, he removed a corresponding portion of the right hemisphere; but instead of both sides of the body being affected, only the left side was affected by the lesion. This, of course, would not have taken place if the recovery on the right side had been owing to the left side of the brain taking up the function of the injured hemisphere.

We have seen that the bundles of sensory nerve fibres descending from the brain to the cord do not cross at the same parts as the motor fibres, and it seems probable that one side of the brain may, in the event of disablement of the other hemisphere, take up the function of sensation for the same side of the body more efficiently than it assumes the function of exciting muscular motions.

Sensations from one side of the body are perceived more acutely in the opposite part of the brain than on the same side of the brain; but each hemisphere so far represents both halves of the body, though unequally, that one hemisphere may act for the whole body, in default of the other destroyed by disease or injury.

It has been already shown, that in certain voluntary actions performed by the right hand, as well as the understanding of heard words, and the utterance of spoken words, the left side of the brain takes the lead. Broca and Maragliano have shown that the temperature of the left side of the head is habitually higher than that of the right after mental exertion. In the exercise of speech, the right side of the brain is supposed to act more automatically, to follow the lead of the other side, and to be less apt to initiate any new process, save in the case of left-handed persons, in whom the activity of the brain, both in the use of the hand and the articulation of speech, is predominant.

With these exceptions, it is not disputed that one side of the brain is enough for the ordinary operations of the mind.

Goltz* found in his vivisections on dogs, that, after removal of the cortical matter of one hemisphere, the intelligence in many cases was not injured to a marked degree; but when portions of any size were taken away from both hemispheres, the animal always showed a marked loss of intelligence, with loss of sensibility, especially of touch, and awkwardness in its movements.

But to come to our own kind, there are a number of instances on record, in which one side of the brain has been

* "Ueber die Verrichtungen des Grosshirns," von Friedrich Goltz. *Bonn*, 1881, p. 161.

found completely destroyed by disease, without any seeming impairment of the memory or intellectual power; but no authenticated instance where the mental faculties remained after destruction of both hemispheres. From this we may conclude that the intellectual operations are double, both sides of the brain working at once, and each side having its impressions simultaneously registered. Here the reader may recall what has been said of the organic changes attending memory. Had these mnemonic impressions been stored only on one side, the destruction of one hemisphere would have caused an obliteration of these impressions, and a complete loss of many pages from the book of memory. That this does not follow is probably owing to the existence of a double record.

We have seen that there is a tendency to the specialisation of heard words in the left temporal lobe (especially in the first temporo-sphenoidal convolution). This explains why "word-deafness" is produced by a one-sided lesion of the brain. Perhaps the rareness of "word-deafness" is owing to the specialisation of the memory of words on one side of the brain being often not so decided or confirmed as to make the loss of this kind of memory or apprehension a necessary sequence in all cases. I know of one case where it did not follow destruction of the left first temporal convolution. Thus the record, even in this function, may be sometimes double.

At any rate, men have lived working with one brain after the other has been destroyed, without knowing their loss or noticing anything wrong with themselves, just as men have gradually become deaf of one ear or blind of one eye without noticing it, because hearing and sight remained good on the other side.

In some of these cases it was the right hemisphere which was wanting; in others, it was the left.* In many of them

* Wigan gives five instances where the deficiency was in the right brain and two where it was on the left. Leubuscher quotes three cases, in all of which the loss was on the right side. Both Wigan and Bérillon sometimes forget to mention the side affected. The latter writer tells us that M. Cotard found that in ten cases where the intelligence was intact the atrophy was five times in the left hemisphere and five times in the right. Dr. Dario Maragliano ("Le Localizzazioni Motrici nella Corteccia Cerebrale Studiate

there was paralysis more or less of the arm and leg, and sensation was probably weaker on the same side. I am not disposed to affirm that in these persons the mental power was not affected. Analogy would lead us to believe that it was weakened ; but, as in many of these cases the deprivation only appeared after death, no adequate tests were applied.

Dr. Ball tells us that, in the examination of Bichat's brain, they found the falx pushed aside from the middle line, and one hemisphere considerably larger than the other. What is singular, this great anatomist held that the absolute synergy of the nervous centres is the fundamental condition of the regular performance of the functions of animal life. We see wrong, where nature has not made a concord between the two eyes. We perceive and judge in the same way, where the hemispheres are discordant. As the haughty troubadour poet Bertrand de Born boasted that half his common sense was enough to deal with men ; so half his brain seemed enough to make Bichat, who died at thirty-one, the first anatomist of France.

So long as the images on both sides are equal, or similar, or completing one another, as in stereoscopic figures, the mind will not have any sentiment of disparity or difference. Two ideas exactly alike will be viewed as one idea, just as two visual images are regarded by the mind as one ; but whenever one hemisphere is so deranged that the two hemispheres work out of accordance with one another, the sentiment of difficulty, incongruity, and disparity appears. It is thus in diseased

Specialmente dal lato Clinico, Reggio-Emilia, 1878) has collected 88 observations of lesions implicating the psycho-motor area of one side of the brain. In 55 of these the left hemisphere was affected ; in 33, the right, standing in the relation of 5 to 3. This lesser frequency of observations in the right hemisphere, he observes, may be put down to the lesser liability of the right brain to become diseased ; or, on the other hand, it may be attributed to many cases of lesions of the right hemisphere passing unobserved and without symptoms, owing to the greater capability of the left hemisphere to act as substitute and make up for lesions of its fellow. Maragliano adds, at the end of his treatise, that in man compensation even for an extensive lesion of the motor area of one hemisphere is possible through the opposite hemisphere, especially when the left brain remains healthy. This compensation is effected through the bundles of nerve fibres which go from the hemisphere to the same side of the body.

conditions that we must look for the double action of the hemispheres.

Schröder Van der Kolk tells us in his book on insanity that he himself was visited by hallucinations. "On shutting my eyes," he writes, "I always saw a number of people around me, and at the same time I had complete consciousness, as I was convinced that it was only hallucination. On account of the feverish heat," he adds, "I used cold applications to the head, and these had immediately the effect of making the surrounding persons and their clothes pale; their movements also became slower, for there played about me the image of a landscape, filled with a number of men; and, at last, I believed that I saw around me only dull grey and white statues. As I had full consciousness, I repeated this observation many times with the same result. With the cessation of the cold applications, the movement and colours of the images again returned. I even altered the experiment a few times by making the application only on the right, or on the left side of the head; then only the figures on the side corresponding to the cold application became pale, and the other half of the group of images retained the former liveliness."

The reason why surgeons who have to deal with injuries of one side of the head have not noticed many cases illustrating the double action of the brain probably is, that they do not often look for them.

Let us take a simple case such as I have witnessed when a military surgeon in India. A man receives a wound which causes great irritation of one side of the brain, the other side remaining unaffected. As long as the patient lies quiet his mind is at ease; but when he is made to speak or walk too much he becomes distressed; the irritation of the injured brain increases because both brains work at once, just as when a man walks with a sore leg, both legs work. There is no intellectual disturbance noted, because the sound brain sustains the weaker one; but there is a sentiment of fatigue and distress because the sound brain in action calls the other also into action. It may be here observed that the anatomical separation of the two hemispheres is so far complete that many inflammations would never spread from the one side to the

other were it not for the enveloping membranes of the brain, which have much more of a continuous structure.

I have observed patients afflicted with melancholia who, though they could conduct themselves reasonably and were aware of everything which was going on around them, refused to speak or make any exertion, because it was attended by a feeling of distress. One side of the brain was probably healthy; but in suffering it to go into exercise the diseased hemisphere also fell into action, causing a deep anguish in the whole being of the unfortunate patient. What in those cases was called insanity was really founded upon a correct sentiment that the brain must have rest through total inaction of mind and body.

This may serve to explain why disease confined to one side of the brain can be the cause of insanity. We know that inflammation or injury to one eye may cause so much irritation to the other that it is advisable to remove the unhealthy organ. In the same way, an irritated or inflaming condition of one convulsion, or lobe of the brain, may so act on its fellow of the opposite side that it would be better were the ailing part totally destroyed or disorganised than that it should accompany the healthy side of the brain with discordant action. The deranged brain in its morbid sensitiveness, its delirious activity, its hallucinations, and its delusive images, may have a long struggle with the healthy hemisphere on the other side till, as it were, both are goaded into insanity.

In these cases we may infer that there is a conflict of emotions and delusions: the healthy hemisphere subdues the irascibility of the other, corrects its strange fancies, and bridles its wild impulses. There is a wrestle between reason and unreason; then a rhythmic strophe, and antistrophe, between the sane and the insane hemispheres, as there is an alternation of colours when two hues are presented to each eye. By degrees resistance is wearied, the stronger feeling predominates, and the mind is whirled into insanity, or the reason slowly sapped, as Pauline was led away by the delusions of her sister Leontine. Thus within the vault of one skull, there is *folie à deux*; when both sides of the brain become deranged at once, it is simultaneous insanity; when one side follows the other, it is imposed insanity.

Does something of the same kind not take place with all of us? In our consultations with ourselves as to what is to be done, it occasionally looks as if two spirits were pleading, sometimes the one prevailing, sometimes the other. The side that acts may win the mastery, then it becomes exhausted and the other side of the brain rallies and tries to gain a new ascendancy. The poets have described two men in one person, or two souls dwelling in one breast, but this only to typify the struggle between our animal and moral natures, our anger and our pity, our temptations and our feelings of prudence or conscience, and we cannot logically place some of these struggling sentiments in the left, and others in the right hemispheres. In all the speculations of philosophy we find little or nothing of a dual nature in man. The widely-spread belief in demoniac possession, is perhaps an indication of the feeling of two wills struggling within one being. Nevertheless, the sentiment of a double personality is rare, even in madness; and we must be cautious in too readily interpreting the words of the deranged to suit our own preconceived theories. So numerous and diverse are the vagaries of the insane mind, that any conceivable fancy may be found in a large asylum. Lunatics will tell you that they have been born again, that they are dead, that they are buried, that they are in heaven or in hell, that they are changed into wolves or other beasts, that they are made of glass, that they are two persons alternately; one man said he was two persons at once, and when he was asked to explain how this could be, he answered, complacently, "Oh, by a different mother."

Let us, however, with due caution, mention a few instances of the sentiment of double personality. It is said to follow the use of hachisch or Indian hemp. People under the influence of large doses have spoken of themselves in the third person and revealed secrets. It has been suggested the condition of double personality could be studied by using this drug.

A well-known neurologist furnishes the following quotation:

"A very good example of what would be popularly called 'increased activity' of the brain 'from debility,' is given in *Greater Britain*. 'This evening, after five sleepless nights, I felt most terribly the peculiar form of fatigue that we had experienced after six days and

nights upon the plains.' Observe, the writer calls his condition fatigue. 'Again the brain seemed divided into two parts, thinking independently, and one side putting questions while the other answered them; but this time there was also a sort of half insanity, a not altogether disagreeable wandering of the brain, a replacing of an actual by an imagined ideal scene.' Popularly we say that the condition was caused by fatigue—five sleepless nights: but I submit that the more reasonable explanation is that fatigue caused only the negative physical state, answering to the negative part of the mental condition, the loss of the 'actual scenes,' and that the 'ideal scenes' which 'replaced' them occurred during activity of lower, more organised, nervous arrangements, uncontrolled by the exhausted highest."

Not only this, but we may suppose that the wear and fatigue in Sir Charles Dilke's brain was greater on one side than on the other. From this it may be guessed that the brain of the right honourable gentleman is of unequal strength. With one hemisphere, he is carried away by the eloquence of Mr. Gladstone; with the other, he is seduced by the ideal views of Mr. Chamberlain.

A more striking instance of the feeling of double personality is given in the African travels of two Portuguese officers.*

"It was no wonder," they write, "if, with all these wretched surroundings, we should have another bad attack of fever; so bad, indeed, that we were completely prostrated and thought our end was near. Strong evidences of general disorganisation, caused, doubtless, by the exhalations from the marsh in which we had our dwelling, aggravated our morbid condition to such a degree that we remained whole days in a state of stupor, without being able to take the slightest nourishment.

"On this occasion we both of us experienced a sensation so extraordinary, that we cannot refrain from putting it on record. During the time we were under the influence of the fever, and particularly when it was at its greatest height, it seemed as if our individuality was composed of two distinct entities. We imagined that another person was lying with us on the same bed, and we were taking note of the progress of the malady in each of these separate

* "From Benguella to the Territory of Yacca," by H. Capillo and R. Ivens. London, 1882, vol. i. p. 375.

beings, so that our lips, in echoing our thoughts, would murmur, 'How that fellow on the right is sweating;' or, as the case might be, 'I think our friend on the left is a good deal worse.'

"It could not be considered a complete hallucination of mind; because, on collecting our ideas (though with difficulty), we found ourselves on various occasions muttering, 'Come, decidedly, I must begin to *undouble myself*.' Be it observed, however, that this species of dualism was subjective, inasmuch as, with relation to external objects, we never fancied any such undoubling to be necessary.

"The recollection of this curious and unnatural state often recurred to our minds when in perfect health, and gave us food for serious meditation, with a view, if possible, to explain it.

"The fact of the non-existence of delirium, and the being able, with a certain effort, to collect our ideas, proved to us that this tendency, most certainly arising from cerebral anæmia, was due to some cause that is not common to a delirious state; but as the phenomenon was difficult of explanation, we at length gave up attempting to find one, under the apprehension that we should be doubling and undoubling when we were in our right senses."

Could this singular affection be a modification of the sense of touch, so that one side was slower in transmitting its sensations than the other? In feeling our own body we have two sensations—the feeling from the hand which touches, and the feeling from the part touched. A double impression might be produced in the mind, if one of these was more slowly conducted than the other. However, one would like to ask a few questions of these two officers who felt themselves four officers. How can a man feel himself double? and who counts him?

The notion of a double being is certainly not innate. Children at first seem to have a difficulty in recognising that there was a time when they were not, and in reaching the conception of a conscious individuality different from their own. They shut their eyes and think that no one sees them.

To have the notion of personality we must first recognise something of what we perceive to be out of ourselves, something distinct from us, something beyond our own feeling, and that does not move through our activity. We go on separating the outer world from our own body, and then parts of our body from the thinking faculty. Following the physiological line of research we reach the two hemispheres deeply

divided. How can one side of the brain compare its own impressions with those of the other side? How can it know anything save its own impressions? How can unity come out of a double set of identical impressions? Is there not something behind which reads off both sets of impressions and fuses them into one? Is there an organ of the Me,—an Ichheits-organ? or have we reached the mind itself?

In the thousands of idiots whom I have seen, I only remember one in whom there appeared to be the notion of double personality. This was an imbecile lad who had been in a lunatic asylum. He would say, when he noticed another person getting anything tempting: "Eh, that's nice, Finlay; would you like a bit?" Sometimes he said: "Would you give me a piece bread, if you please?" Then he would sing a few words, remarking at the end: "Finlay is singing." A short time after he came under my care, I heard the noise of slapping, and then a roar. On going into the room I found Finlay in his bed, and an attendant beside him. I said: Why have you been striking the boy? To which the woman replied: "He has been striking himself, and then crying out. He has just dropped it since you came in." I waited a little in the room, when he recommenced slapping himself vigorously on the right cheek, each slap being followed by a cry as if of pain. After having thrashed himself soundly he would say: "Eh, you have been a bad boy to-day, Finlay;" but whether he thought Finlay bad because he beat himself, or beat Finlay because he thought him bad, it would be difficult to say. He was not at all docile, and used to tear his clothes, and began to be aggressive, striking at those near to him and then laughing, so I asked for his removal. He seemed sorry to go. When two men came for him, he said: "Eh, Finlay, you are going away and leaving all your friends. Good-bye, Finlay," as if he were to stay and Finlay to go.

M. Langlois* describes a patient in the asylum at Dijon who seems to have resembled this strange boy. He was sixty years old, imbecile, and very talkative. He generally spoke of himself in the third person, and would strike himself,

* Annales Medico-Psychologiques, Paris, 1881, Tome Sixième, p. 80.

then laugh and rub his hands, saying: "G. has been bad. He has been punished." Often in a sudden fit of anger he would seize his shoe, strike his head with violence, and plunge his nails into his cheeks. Then he would look as if he had done something praiseworthy. On M. Langlois asking him: "Where is G.?"

"Here he is," replied he, striking his breast.

M. Langlois touched his head, asking him, whose that was.

"That," said he, "is the head of Coch."

"Why do you strike it so?"

"Because Coch's head must be punished."

"But you struck G. just now."

"No; G. has not been bad to-day. It is Coch's head which should be struck."

M. Langlois found in this imbecile no loss of sensation; but the left side of the head was much fuller than the right. There was paralysis of the right side of the face. M. Langlois supposes that there exists an antagonism between the two hemispheres, which is interpreted by a creature of rudimentary intelligence as indicating two beings.

At a meeting of physicians at Leipzig, Dr. Meschede* gave an account of a man, about forty-seven years old, who believed himself possessed of two spirits. One of them spoke Polish, the other German. The man believed that one of them was the spirit of his father, the other of a man whom he named. Between the two they made such a noise that he felt quite bewildered. Generally, he heard the voices in his head; but sometimes they seemed to come from the neck, chest, or abdomen. He believed that the two spirits had their abode in his head, and influenced his thoughts and his will; and, though he struggled against them in general, he felt himself powerless. They abused one another, and suggested bad and shameful thoughts to his mind. Sometimes, in despair and full of rage, he would hold his clenched hand before his eyes, and cry out, "Accursed spirit in my brain, I know I cannot get rid of you; but you will perish with me."

This unfortunate man died of an intercurrent disease.

* "Allgemeine Zeitschrift für Psychiatrie," Band xxx. p. 109.

There were found in his head four cysts or small bladders of the embryo of the *tænia solium*, or tape-worm, which lay upon the floor of the skull under the commissure of the optic nerve. One of these cysts contained a still living, another a calcified scolex or embryo of the tape-worm. A calcified cyst was also found in one ventricle of the brain. There was some degeneration of the arteries of the base of the brain.

Dr. Meschede was disposed to refer many of the symptoms to the presence of the living parasite under the commissure of the optic nerves. The patient had described the visions and representations which forced themselves into his mind in the following manner :—"Strange thoughts and images of all sorts crowded into his consciousness, destroying the quiet flow of his thoughts. Scarcely had he begun to think when other representations and thoughts mix themselves with those which he has already in his mind, accompanied by corresponding images upon the field of vision, which moved before his eyes, generally appearing to cross from right to left, or from left to right. The words spoken by the spirits seemed to come sometimes from one side, and sometimes from another."

Dr. Carpenter mentions a woman who believed that she had become an old clergyman, and she thought it ridiculous that this clergyman should propose to marry her.

One of the most striking instances of cerebral dualism is described by Professor Ball, who showed him to his clinique. This was a young man who, while travelling in South America, had a sunstroke which rendered him unconscious for a month. Dr. Ball's words are here translated :—

"A few days after having regained his senses he distinctly heard a man's voice saying, 'How are you to-day?' The patient replied, and a short conversation followed. The next day the same question is repeated. This time the patient looks around, and sees no one in the room. 'Who are you?' he asks. 'I am Mr. Gabbage,' replies the voice. Some days later the patient catches sight of this ideal person, who from this time always appears to him with the same features and dress. He always sees Gabbage facing him, but only the head and shoulders. Gabbage wears a hunting dress, and appears to be a well-made and vigorous man about twenty-six years of age, with a thick beard; his complexion is very brown, his eyes large and

dark, the eyebrows strongly marked. The patient, prompted by an excusable curiosity, wished to know the profession, the habits, and the residence of his visitor ; but the latter would never give any other information about himself than his name. Afterwards the young man consulted all the directories which he could get of England, France, Europe, and America without success. But this tyrannical apparition, not content with disturbing his sleep and wearying his mind by incessant questions, began to advise, or rather to command him to commit strange and insane actions. One day he was quietly reading the newspaper before a large fire, when suddenly Gabbage ordered him to throw his watch and chain into the fire ; he obeyed this order, and waited until they were completely destroyed. Another day, at Monte Video, being near a lady whose child was ill, he received the advice to make her take a large dose of chlorodyne, and to give a double dose to the child. The latter died in a few hours ; the mother became very ill, but afterwards recovered. Another day, receiving an order to throw himself out of the window of a third storey, he obeyed immediately, and could not keep from thinking, as he fell on the pavement, that Gabbage gave him very bad advice. One day, while conversing with him about these morbid impulses, he said to me, 'You are not well up in science : you seem to be ignorant that one has often two brains. This is precisely what I have. Gabbage has the left brain, and I possess the right one. Unfortunately, it is always the left side which carries me away, and that is why I cannot resist the advice of this man, who appears to be an evil spirit, or at least a malevolent person.' This conviction was so strongly rooted in him that one day after a subcutaneous injection of morphia, he said to the clinical clerk who performed the operation, 'You have made a mistake. You have made the injection on Gabbage's side ; it will have no effect on me.' This patient," Professor Ball adds, "has long quitted the clinique ; but I have learned that he has still the same hallucination, and that he continues to submit to the influence of his persecutor. Here is, then, a brain of which the operations appear clearly divided into two ; and it can easily be believed, following the theory of the patient himself, that one of the hemispheres is entirely delirious, while the other regards its fellow with compassion."

It would be easy to collect instances were we to regard insane people talking of themselves in the third person as a proof of the sentiment of double personality. I know of a young woman afflicted with melancholia who was heard to say,

"I hate you, Janet." "Do not drown yourself, Janet." This being her own name. According to Dr. Descourtis* this habit is not uncommon in general paralysis. Here is one of his instances :—M. Georges, thirty-four years of age, would be heard to say, "You know, M. Georges, that they have placed you in this establishment. In spite of your courage you have to submit to the administration; otherwise, you are well off here, though your position is uncertain. However, we recognise who you are. We know that you are M. Georges. That is the name under which you are everywhere known, and under which you are inscribed here. Well, M. Georges, we warn you that we quite despair of you," and so on. This habit of addressing himself was still kept up after he had fallen deeper into fatuity. He would give a loud cry, and then say, in a low voice, "Would you be quiet? Speak lower." And then the answer would come, "Well, I shall speak lower." After having raved for a time he would stop and say, in a grave voice, "Who speaks like that? Would you be quiet?" And then he would remain silent.

Men have no innate consciousness of the locality of the thinking faculty. Epicurus, a close observer and powerful reasoner, placed it in the heart. The close relation of thought to the brain was a discovery of the Alexandrine School, hence we look with distrust upon observations like those of Dr. Gall, who tells us that in Paris he cured a young lady who had the feeling that she should fall into insanity on one side of the head, because she remarked that the current of her ideas was different on one side from the other. This lady probably knew something of Gall's system of phrenology, and the double set of organs representing mental faculties which he placed on the two sides of the brain. The insane are quick to catch at new scientific notions to explain their delusions. Complaints of being electrified and being magnetised against their will have long been common; and, since the invention of the telephone, they have said that there are telephones in their rooms, or that people use this instrument to torment them. In a

* "Contribution à l'Étude du Dédoublément des opérations Cérébrales. *L'Encéphale*, 1881, p. 126.

similar fashion the medical superintendents of asylums will hear many whimsical applications of the conception of the dual functions of the brain should it become popularised. Apart from previously-acquired knowledge, it is difficult to see how a person could recognise this derangement as a discordant working of one side of the brain. This would be the result of inference, not of perception or intuition. The symptoms one must look for are thus described by Luys:—

“It is on account of this profound discord that those patients whose brains have lost their equilibrium (*malades déséquilibrés*) express their manner of being. They feel that their minds are wandering, that they are becoming insane, that voices excite them in this or that direction, that they are invaded by unhealthy thoughts of which they disapprove, that they are vexed by an incessant struggle which they are unable to pacify.”

It is especially in those cases where the patient is conscious of imperilled reason, where the one brain is witness to the derangement of the other, that we may look for evidence of dual action.

The observations of Broca, Boyd, Demme, and others* seem to indicate that the left brain in ordinary conditions is the heaviest; but Luys has found that, in insanity, it is the right brain which weighs most. Some distinguished French physicians have advanced that insanity may be the consequence of a want of proper balance between the two hemispheres. On the other hand, Dr. Marandon de Montyel thinks that the preponderance of the right hemisphere is the effect and not the cause of the insanity. There is no doubt that epilepsy, general paralysis, and other diseases of the brain, in the end cause an alteration in the balance of the weight of the two hemispheres by alterations in the nutrition of the brain, or the wasting of healthy tissue, or the addition of new elements.

* On the other hand, Crichton Browne, Crochley Clapham, and Grieve (in Negroes), have found the right brain in sane people to be heaviest. M. Ph. Rey (*Annales Médico-psychologiques*, No. 1, 1885), finds that in the average number of weighings the right side is heaviest both in the sane and the insane. He acknowledges the variations in equality of the weight of the right and left brains in the insane.

The double functions of the brain have been invoked to explain events in dreaming, sleep-walking, hypnotism, alternate consciousness, and double memory. In all these conditions it seems likely that a part of the brain is active while the functions of other parts are for the time suspended. It has been thought that by lying on one side dreams are excited on the other; but we doubt whether this holds good in ordinary health.

In a case where there was congestion in one side of the brain, lying on the affected side, bringing pressure upon the afflicted brain, caused the patient to waken in distress or with a fearful dream. A lady told me that she had dreamed she saw one side of a village which was familiar to her, or one side of a room which she recognised, only the whole was reversed, as if seen in a mirror. This she remarked with surprise. The reader will remember what we said, at page 306, of the images on each side of the brain, in treating of mirror-writing.

In ordinary sleep-walking or hypnotism, though some portions of the brain seem to lose their function for the time being, it does not appear that this loss of function is confined to one side of the brain; more likely equal or corresponding portions on each side are affected. In somnambulism, there is no paralysis, or loss of feeling on one side, or loss of vision in one eye, as we might expect if one side of the brain alone were affected. In general, the patient attends to only one series of ideas, perfectly regardless of anything not chiming in with them. Thus, a boy at a public school got up from his bed, saying that the house was on fire. He went from bed to bed and told the boys to get up. One boy would not get up, when he pulled him out of bed. The head-master came and asked what all this was about; but the boy paid no attention to him, till they succeeded in wakening him, when he was found to have forgotten what he had done. Sometimes the sleep-walker remembers what he has done, but remembers it as a dream. Long-continued fits of double consciousness are rare; but from time to time some singular ones are published.

These conditions are frequently associated with epilepsy or hysteria. In one case, where epilepsy followed a fall from a ladder, there were short periods of suspended consciousness.

After one of these the young man took possession of a carriage which he found in the street, drove to his father's grave, a mile and a-half distant, then collected some flowers, which he gave to his mother. She, being frightened, told him to give back the coach to the owner, instead of which he left it in a livery stable in his own name. On awaking, it was found that he had totally forgotten what he had done. On another occasion, he suddenly awoke to find himself in a ship at sea. He had gone and engaged himself as a sailor at New York in a vessel bound for London. They soon found out that he was a landsman, and noticing him to be very flighty, exempted him from mounting the rigging. It was only on inquiry that he ascertained that he had been several days at sea, for, on awaking, all the strange sequence of events had disappeared from his memory.*

Schröder Van der Kolk gives the following case of periodical remission or disappearance of the memory :—

“Several years ago I was consulted in the case of a girl, twenty years of age, who seven years previously had recovered from a tedious illness, out of which at last the now four years' existing condition had arisen. In the morning after she awoke, at a certain hour, a kind of chorea appeared, in which she beat with the hands according to measure to the right and left,—that continued a half-hour; then she came to herself, but behaved quite like a child. The next day the convulsions occurred again. But, after they had ended, she behaved herself quite as a discreet maiden. She spoke French and German well, and showed herself well read. Then also she knew nothing of the preceding day, but her memory corresponded only with the day but one before, or with the so-called lucid day. This went so far that on the silly or childish day she began to learn French again, but had only made moderate progress, while on the following day she spoke it quite fluently. I had visited her fourteen days, invariably on the so-called childish days, when she always recognised me. Then for the first time I came to her on a good day, and was quite a stranger to her; she could not remember ever to have seen me. This change had already occurred uninterruptedly for four years, and with such regularity that one might have set the clock by it, for the blows or strokes always returned at the same time, and were repeated in the same number. . . . During the

* *The American Journal of Insanity*, July, 1873.

summer she generally went with her parents to a country house, and the bad day was chosen for the journey. When she awoke on the next day she was much astonished at the change of residence, and knew not she had come to the present dwelling-place."

Still more remarkable is the case of Felida X.* This woman, born in 1843, was of a hysterical tendency. When fourteen years and a-half old, the states of alternate consciousness began; she would drop asleep for about ten minutes, and then suddenly open her eyes in a new condition. This condition became gradually prolonged in duration. In what M. Azam calls her normal state, Felida is generally suffering in health, of a morose disposition, reticent in speech, but very industrious. In the second state, she seems in good health, is gay, lively, and extremely sensitive. "I will even say," he adds, "that in this second condition all her faculties seem to be more fully developed—more complete. This second life, wherein no physical pain is experienced, is far superior to the other, and especially so on account of the important fact which we have already brought to notice, that while it continues Felida remembers not only that which has taken place during previous attacks, but also during her entire normal life, whereas during her normal life she has no recollection of that which took place during the attacks."

At the time this account was written Felida was thirty-two. She was married, and had two children alive. She had lived eighteen years, passing from one of these states into the other.

"One can hardly realise," observes M. Azam, "the singular impression made upon an observer by a person who, like Felida, forgets everything that has passed, everything that she has seen, everything that she has said, and everything that has been told her, during three or four preceding months. She does not awaken from a dream—for a dream, however incoherent it may be, is always something; she comes out of intellectual non-existence, and if, like most delirious persons, she has not lived intellectually during this period, the gap

* Periodical Amnesia or Double Consciousness, by M. Azam, translated from the *Revue Scientifique. Journal of Nervous and Mental Disease*, October, 1876.

would be of little importance. But during this time her acts have been complete and rational. Time has advanced ; her life, and everything about her, have advanced with it."

M. Azam remarks that sixteen years before the second condition lasted only several hours in several days, but that it now lasted three or four consecutive months against periods of the normal life of only three or four hours' duration. The latest news we have read of Felida is in the *Alienist* for January, 1883. We are told that "for twenty-five out of every thirty days she does not remember what she has done during the other five. Her age is thirty-nine years."

M. Azam affirms that in the case of Felida X. the memory alone is the seat of disorder, and that the change of character and affections are only consequences of an alteration of this faculty. His hypothesis is, that the changes in the condition of the young woman have as their proximate cause a momentary and periodical diminution in the flow of blood to the part of the brain which presides over the memory. We have no exact proof that memory is localised in any particular part of the brain, and some things seem to indicate that it is diffused throughout, but we may suppose it occupies a layer or stratum of the grey matter. In either of the two conditions Felida appears to possess all her faculties and general acquirements, save the memory of what occurred during one set of scenes in the drama of her life, when she is unable to recall events in her second or more exalted condition.

Supposing a contraction in the vessels of the brain at one place A, which is quite in accordance with known physiological facts, this would render a portion of brain functionally inactive, and the mnemonic images stored there would be inaccessible to the mind. Felida's affection then would be that, under certain conditions, the function of A is suspended, and at other times it alone is active, the mnemonic functions, at least, of the other portions of the brain B being suspended. But then, in what M. Azam calls the second or abnormal state, but which is rather like the normal one, Felida can recall events which have happened in both states, and here the hypothesis is at fault, for we must assume that in the second state both A and B were functionally active. Why, then, in passing into

the first state can Felida not remember through A what took place in the second state, even if B had become inactive? The general rule undoubtedly is, that in these conditions of alternate or double memory the subject in the hypnotic stage forgets the circumstances of his present life, and commences a new memory, which is lost when he awakes, but is often again taken up in the next fit of somnambulism; for, passing over the intermediate events of daily life, the reminiscences of the person affected go back to the last hypnotic state.

Although it is an exception that Felida in her second state remembers what was done both in the first and second, still we are called upon at least to show that this memory is not incompatible with our hypothesis. May it not be owing to increased facultative power during the second and more exalted mental condition? We know that the power of the senses or of the general sensibility, as well as the liveliness of some of the mental faculties are enormously exalted in some cases of somnambulism or hypnotism. Our ignorance of what really takes place in the tissues of the brain is so great that we can only make guesses from this and that ascertained fact. Some of these seem to indicate that the changes causing loss of memory, temporary, periodical, or permanent, are not confined to one portion of the brain, but are general and dynamic. We have, for instance, the story of the intoxicated porter who forgot where he had left his parcels till he again became drunk; that is, till his brain had returned to the same specific state in which it was before. Then we have statements to consider such as a blow or a fever causing loss of memory or insanity in some cases, and recovery from insanity in others.

The loss of memory in somnambulism and hypnotism is an oblivion of particular events, not a loss of general acquirements, such as speech or aptitude for bodily exercises. Sometimes the forgetfulness of events seems complete, as is illustrated by a woman who was told in the mesmerised state that her mother was dead. This caused profound grief; but on awaking she remembered nothing about it, or of the feeling of distress the news had aroused. In other cases the loss of memory seems owing to sudden dislocation of the chain of ideas, which can be reknit by supplying some suggestive word or action.

Thus Heidenhain* after repeating some verses of Homer to a hypnotised person found that he could recall them to his memory after awaking by giving a single word in German recalling the meaning of the passages quoted.

In some other conditions the loss of memory is complete and profound. The following, taken from "Mayo's Physiology,"† is a good instance of what has been now and then observed :—

"A student at a university in the United States, who is now one of the most respectable clergymen in that country, possessed a tolerable share of classical knowledge, when the consequences of a fever, which affected his brain, deprived him entirely of his former acquisitions. In fact, he had now become so ignorant that he was not only unable to read a Latin book, but even knew nothing of the grammar. When he had regained his bodily health, being of a persevering disposition, he began again the first rudiments ; everything was quite new to him ; he passed through the accidence and syntax in his grammar, and was learning to construe, when one day, as he was making a strong effort to recollect a part of his daily lesson, the whole assemblage of the ideas which he had formerly acquired and lost suddenly reappeared to his mind, and he found himself able to read and understand the Latin authors as he had done before his illness."

In a paper "On the Re-education of the Adult Brain,"‡ Dr. Sharpey gives an example of a lady of twenty-four, who, as the result of an obscure illness followed by a state of torpor which lasted three months, entirely lost her memory, could not recollect any one whom she had ever seen before, not even her husband, and had to learn anew to speak, read and write, sing and knit. This she did very easily in a few months, being evidently aided by her previous knowledge, though she had not the slightest recollection of ever having possessed these accomplishments before. In the end she seems to have totally recovered all her faculties.

In these cases the whole brain seems to have been affected ;

* "Der Sogennante Thierische Magnetismus," Leipzig, 1880, p. 12.

† London, 1883, p. 219.

‡ *Brain*, vol. ii. In the same volume there is a similar case described by Dr. Mortimer Granville, p. 317.

but supposing changes to have occurred only in one hemisphere, the other being unaffected, or the two hemispheres being deranged alternately, results similar to those observed in states of epileptic or ordinary somnambulism might be expected.

In the remaining pages of this essay I shall follow Bérillon, drawing most of the statements from his chapters entitled :—

“ PROOFS TAKEN FROM THE STUDY OF HYSTERO-EPILEPSY
AND EXPERIMENTAL HYPNOTISM.”

In hystero-epilepsy there is a well-marked tendency for one side of the body to be more affected than the other. The left side is twice as often affected as the right. There is loss or diminution of sensation and of muscular sense, generally superficial, sometimes deeper ; and this loss of feeling is often strictly confined to one side of the body. This is the teaching of Charcot and his school ; but if we follow two German physicians* who have recently examined this subject, genuine cases of hemiæsthesia are rare, and the other side of the body always shares more or less in the loss of feeling. They have found this condition of anæsthesia in several nervous diseases, such as epilepsy and chorea. The eyesight is sometimes affected, one eye losing the power of distinguishing colours. In many cases there is lessening of the field of vision, so that the patient in reading a large bill would only see the words in the middle (marginal scotoma). Bérillon tells us of a case of hemianæsthesia so exactly bounded by the middle line that a patient plunged in a bath only felt the water on one side. A hysterical woman had so complete a loss of feeling on one side of the face, that when she drank it seemed as if the glass were broken, the sensation of touch ceasing at the middle of the lips. There is also enfeeblement of muscular power on the same side. There is generally mental disturbance, often of a highly emotional character. Sometimes the patient is visited by hallucinations, apparitions of cats, rats, and monkeys, and fantastic animals, which generally seem to come from

* “Ueber das Vorkommen und die Bedeutung der Sensorischen Anæsthesia bei Erkrankungen des Centralen Nervensystems, von Dr. R. Thomsen und Dr. H. Oppenheim,” *Archiv für Psychiatrie*, xv. Band, 3 Heft.

behind, and are seen on the same side as that on which there is loss of sensation. Hallucinations of hearing also occur—music, bells, or voices. These are supposed to be dependent on affections of one side of the brain. The studies of Charcot, Richer, Bourneville, and other French physicians in the hospitals of Paris, have given results of such a wonderful character that they have been received with some distrust. The tendency in hysterical patients to lie, deceive, and excite interest by the display of exaggerated emotions is well-known. Of this source of fallacy, however, Charcot and his school are, of course, aware; and they insist that sufficient precautions have been taken to guard against it. Their experiments have been repeated elsewhere, and have met with confirmations, corrections, and denials. Having no experience of my own in this line of research, I shall content myself with reproducing some of the most remarkable of their statements with such occasional criticism as the comparison of independent experiments has suggested.

Amongst the most startling of their discoveries are the phenomena of oscillation and transfer. The anæsthesia or loss of feeling sometimes passes from the one side to the other, and then perhaps returns to the first side. Sometimes this is repeated again and again, constituting what has been called consecutive oscillation. Burq claimed to have discovered that the application of metallic plates to the surface caused the anæsthesia to disappear from one side of the body to the other; that is, the loss of feeling, or the loss of vision, was transferred to the sensitive side or to the other eye, and then again transferred to the side originally affected. The loss or enfeeblement of motor power can also be transferred in the same way. Some metals, such as iron and gold, were found more efficacious than others; and metals which suited one hysterical patient were found to have no action on another. The metals in the form of powder were also given internally. It was soon found that these phenomena of transfer could be produced by feeble electric currents, magnets, static electricity, and the vibrations of a tuning-fork. This method of treatment has not been found very successful; indeed, patients do not want their diseases transferred from one side to the other, they want

to get quit of them entirely. It has been said that plates of wood or bone substituted without the knowledge of the patient for plates of metal, have been found equally efficacious. Many able neurologists have regarded these startling results with scepticism; others explain them by pointing out the influence of imagination, suggestion, and expectant attention on the susceptible minds of the hysterical patients, considerations to which reference will again be made, though they cannot be fully discussed in this essay.*

Bérillon, who gives full faith to transfer, quotes the explanation of Rosenthal. This German physician thinks that the phenomena in question are the result of an excitation of the vasomotor centres of the sympathetic nerves by agents applied to the skin. This causes a contraction of the vessels of the hemisphere of the opposite side, which is followed by a compensating relaxation of the vessels of the other hemisphere, and the loss of sensibility to the opposite side of the body. The ease with which these contractions of the vessels are produced, by small irritations acting from a distance, is owing to a want of the power of resistance, to a born or acquired weakness of the vasomotor apparatus which Rosenthal regards as the essential deficiency of hysteria. Without discussing the merit of this explanation, it may be here observed that it has been proved by direct experiments on animals that the action of the interrupted electric current on one side of the body is followed by dilatation of the vessels of the brain on the opposite side. This, at least, shows that the supply of blood to the brain can, in some circumstances, be modified by agents applied to the body.

From hysteria we pass by an easy transition into the still more wonderful manifestations of what has been called animal magnetism, mesmerism, or hypnotism.† The reader probably

* The reader will find an able and candid review of the subject in "Metalloscopy and Expectant Attention," by D. Hack Tuke, M.D., *Journal of Mental Science*, January, 1879.

† None of the explanations of this singular condition seem to me at all satisfactory. Heidenhain (*op. cit.*, p. 35) has shown that a man may be mesmerised after the inhalation of nitrite of amyl. As the inhalation of this drug is known to dilate the arteries of the brain, he considers this

knows the very simple means used to throw the subjects into the hypnotic state. They are made to look fixedly at a coin, metallic disc, or glass button, or to gaze at a cork fixed between the eyes. Some are mesmerised by a ray of light thrown on the eye, or by suddenly sounding a gong, or by making passes with the hand in front. In all cases the imagination or attention is aroused or stimulated. The general rule is, that the operator who puts the subjects into the hypnotic state can readiest awake them. *La cause qui fait défait*, He who makes, unmakes. The subject is awaked by blowing gently on the face, rubbing the eyes or eyebrows, or making passes backward.

Hypnotism has been divided into three stages—the lethargic or torpid condition; the cataleptic stage, in which there is rigidity of the muscles, so that the patient remains passively in the position in which he is placed; and somnambulism, for this stage of hypnotism is like somnambulism, artificially produced. In all these conditions the function of the will is suspended. The patient is, as in a dream, without any powers of resistance, receiving the ideas suggested to him by the operator, who can thus make him think or do anything he wants.

The experiments cited by Bérillon are worthy of attention, as promising a new and unexpected demonstration of the crossed influence of the hemispheres upon the muscles of the body.

Heidenhain found that by prolonged rubbings of the back of the head of the hypnotised person by the hand, a species of enfeeblement, or catalepsy of the muscles of the opposite side could be produced. When the operator acted on the left side of the head, motor aphasia was added to enfeeblement of the

experiment to prove that hypnotism is not caused by a diminution of the calibre of the vessels. Dr. Hans Kaan ("Ueber Beziehungen Zwischen Hypnotismus und Cerebraler Blutfüllung," Wiesbaden, 1885) has come to the conclusion, from some experiments made with the plethysmograph, that in the lethargic state the volume of blood in the arm is increased, while in somnambulism and catalepsy it is diminished, as he supposes from a greater supply of blood going to the brain. He thinks that in hypnotism the brain passes from a state of anæmia into hyperæmia.

limbs of the right side. When the right side of the head was rubbed, this aphasia did not follow. Ladame found that by placing the hand (which should be slightly shaken) on the left side of the head, the right arm and leg were suddenly extended, and became stiff like wood, while the limbs on the left side became supple and inert.

The experiments on which M. Bérillon places most reliance were conducted by himself under the superintendence of Dr. Dumontpallier, at the Hospital of La Pitié, and were repeated at the Asylum of Sainte Anne, under the charge of Dr. Magnan. He claims to have been able to suspend the action of one hemisphere, to cause anæsthesia and muscular enfeeblement on one side, and then to transfer it to the other side of the body by the application of metallic plates to the skin. By a variety of manœuvres of a wonderfully simple nature upon the hypnotised subject, Bérillon claims to have succeeded in functionally dividing the individual into two halves, each half presenting the symptoms of a particular stage of hypnotism. He could make one side lethargic, the other cataleptic, or make the hypnotised person show the symptoms of lethargy on one side and somnambulism on the other. Putting one of his patients, a woman of twenty, into the state of somnambulism by pressure on the crown of the head, Dumontpallier made her begin to knit; then, by pressing on the right side of the crown of the head, the action of the left hand was stopped, the right hand still working; but on applying pressure anew on the same point of the head, the left hand was again put in motion. The same manœuvre could be done with the right hand, and on pressing the top of the head in the middle the patient awoke.

Braid long ago pointed out the suggestive influence of positions of the limbs, or movements of the muscles expressive of the emotions on the minds of hypnotised persons. Joining the hands suggested supplication; doubling the fists, fighting; raising the head and putting the person on his knees suggested the idea of prayer and of heaven. Taking advantage of this principle, Dr. Bérillon tried a number of experiments. Here is a translation of one of them :—

“A patient named Pauline G., twenty years of age, is put into

the cataleptic sleep. It was previously known that sensibility was equally distributed in both sides of her body. The experimenter lays the ends of the fingers of the patient's left hand on her lips, and causes the left arm to make motions as if she were kissing her hand to some one. Immediately the patient repeats the movements, the left side of her face taking a smiling expression. As long as the movements of the left arm continue, the left side preserves a smiling expression. Then the right hand and arm are put into the attitude which one would make if pushing something horrible away; the patient keeps the right arm in this position, and the right side of the face takes an expression of terror. The eyebrows contract, and the lips droop. In this state the patient's face has a double expression agreeing with the positions of the arms. When awakened, she remembers nothing of what has passed."

Another experiment of a similar character is detailed. It was found that they could be varied by changing the positions. By means of instantaneous photography the appearances obtained were preserved. In communicating these facts to the Society of Biology, M. Dumontpallier adds: "Is it not reasonable to suppose that, in this experiment, the muscular action on one side has suggested on the opposite hemisphere of the brain an expression which is portrayed by the appearance on one side of the face?"

In this experiment, each cerebral hemisphere must be set in activity by muscular action, and the perception of each half of the brain is shown by the muscular contractions of the face: one side having a smiling expression, and the other one of fear.

Madame C. was put into the state of somnambulism, and some drops of water were dropped upon her tongue. By assuring her that rum was put upon the right side of the tongue and syrup on the left, she felt at once the sharp taste of the rum and the sweet taste of the sugar. "There was then," adds our author, "a double illusory perception following a distinct and real sensation from each side of the tongue." Plugging up the right ear of another patient, they described to her a peaceful country scene, which her imagination soon began to portray before her eyes. Suddenly removing the cloth from the right ear they whispered into it the description

of a scene of carnage. The patient is terrified, and her face expresses on the right side fear, and on the left the satisfaction derived from the contemplation of the rural scene. Then we are told that, by speaking into each ear, the patient is induced by the operator to describe the scene of blood, or of country life, while each side of the face preserves the expression corresponding to the hallucinations she continues to see. The author tells us that photographic copies of these double expressions of physiognomy were taken.

It is to be hoped that the interest of the subject will justify the translation of another passage :—

“Simultaneous illusions and hallucinations of sight and hearing. —It is easy to produce in a hypnotised person hallucinations of sight on one side, and hallucinations of hearing on the opposite side. All that is needed is to describe an agreeable picture in the left ear, and to imitate the noise of firing in the right. Immediately the right side of the face expresses fright, while the left side still continues to express satisfaction. There exists, then, simultaneously in the brain two hallucinations of a different nature, excited by sounds applied to each ear, each hallucination occupying a different hemisphere. Otherwise, it would be difficult to comprehend the opposite contractions of the face in connection with each of the hallucinations. As for the critic who says that the illusions and hallucinations brought on with hysterical patients in the somnambulistic period are merely simulated by the patients submitted to these experiments, there is only one reply to make, that it is not possible for anyone, even a hysterical person, while in a waking state, suddenly to express joy on one side of the face and fear on the other.”

Bérillon deduces from his ingenious experiments in hypnotism the following conclusions :—

By certain means we can in man, at the pleasure of the mesmeriser,—

1. Suppress the psychical, motor, and sensory activity of one hemisphere of the brain.
2. Give to each hemisphere a different degree of activity.
3. The two hemispheres having an equal activity, we can create for each of them at the same time manifestations varying in their seat, their nature, and their character.

That is to say, the same individual may in the hypnotised

state represent by each hemisphere a distinct being, each endowed with its own individuality.

Thus each hemisphere being complete in itself (although in its sensory and motor action it is generally limited to one side of the body), and enjoying within certain limitations its own particular activity, one may say that man in his mental, motor, and sensory functions is really *double* ; *he possesses two organs of ideation, two brains.*

"It is impossible," concludes Bérillon, "to demonstrate by experiments in a more striking and precise way the functional independence of the two hemispheres of the brain."

Yes, but have we not had something like this before, to demonstrate theories now as dead as the fancies of astrology?

There are many living who can remember how Dr. Elliotson, a man eminent in his day, thought he had placed Gall's system of phrenology on a secure basis by his experiments on mesmerised persons. This was done by touching the "bumps" on the head under which the different phrenological organs were believed to be, mere contact of the finger through the scalp and skull being supposed to excite the mental faculties, as rubbing the head is held by the hypnotists of the day to excite the motor functions of the hemispheres. Dr. Descourtis,* who assents to the experiments and views of Dumontpallier and Bérillon, somewhat unwarily recalls the statements of Elliotson, how, under the influence of benevolence and adhesiveness, Miss S. embraced a lady in the most affectionate manner, and how under the influence of destructiveness excited from the opposite side of the head, she rushed to push back an imaginary enemy, whilst with the other arm she exerted herself to protect her friend, and so on. Descourtis adds, that without pretending that phrenology was correct in all points, it must be owned that its supporters understood the independent functions of the two hemispheres. But it is easy to see that Dr. Elliotson's mesmerised ladies gave as good evidence for the localisations of Gall as for anything else. I knew an old practitioner in a country town, an intelligent man, who lived

* "Hypnotisme, *Révue Critique de quelques publications récentes*, *L'Encéphale*, No. 1, 1881, p. 70.

and died in the belief that here he had a demonstration of the truth of phrenology which could neither be evaded nor shaken. Like Elliotson, he insisted that the mesmerised persons knew nothing of the position of the phrenological organs on the head, yet it is clear that they must have done so, and anticipated the expectations of the mesmeriser. It would be unfair to say that because Elliotson deceived himself, that Dumontpallier and Bérillon have done the same ; but we have a right to ask how, by exactly the same methods of inquiry, they each arrived at conclusions so different.

As the last outcome of inquiry, we have M. Bernheim declaring before the Society of Biology of Paris,* that suggestion gives the key to all the hypnotic experiments which he has witnessed. Hypnotised persons, though detached in appearance from the outer world, hear everything, and passively obey the idea suggested to their mind till another is substituted by the operator. But sometimes they do more than this. With wonderful quickness and sagacity they guess what is passing in his mind, and anticipate his wishes by actions. It is in this way that scientific men like Elliotson, Gregory, and Reichenbach were so egregiously deceived by ignorant young women.

Ere we close these pages, we are able to note that MM. Bernheim and Charpentier† have, in studying hallucinations in the somnambulism of hypnotised persons, with double-refracting prisms and other optical apparatus, arrived at the conclusion that the answers of those under hallucinations of vision were “in perfect contradiction with the laws of optics. The image, therefore, is a fictitious one, arising entirely from the imagination of the subject.” This confirms the suspicions we recorded towards the close of the paper on

* *L'Encéphale*, No. 3, 1885, p. 349. M. Bernheim writes : To change the hypnotic relaxation into catalepsy it is enough to suggest to the subject that a limb should remain fixed either by changing the attitude given to the limb, or by affirming that it is going to remain in the position given to it. In none of his subjects could M. Bernheim obtain *without suggestion* the transfer of a contraction or of an anæsthesia any more than the transfer of a localised pain.

† *Gazette Médicale de Paris*, Nos. 11 and 12, 1885.

Hallucinations (p. 25), about the fallacy lurking in the experiments of Féré and Binet.

But though there is need of caution against some highly-illusory grounds of fallacy, we have still much to hope from a prolonged and skilful inquiry into the wonders of hypnotism.

The question of the dual function of the double brain can never cease to attract and interest the philosophical mind. Although it still has its obscurities and mysteries, we can read, in the advance which has been made since the time of Wigan, a promise that the ceaseless activity of scientific inquiry will go on adding to the knowledge we have already gained on this difficult subject.



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